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THE VALUES OF VEGETABLE DRUGS AS RANKED BY PHYSICIANS.

SOME time ago, Prof. John Uri Lloyd undertook to determine the extent to which American Physicians are influenced by the authority of the Pharmacopœia in selecting the vegetable drugs employed by them, and also the order in which they considered them of value.

The results of these inquiries were set forth in a paper read before the section on Pharmacopœias and Formularies at the Denver Convention (see Nov., 1912, Journal, p. 1228), which presents statistical information that does not fit in well with doctrines which many of us had previously considered to be well established.

It is sometimes said that nothing lies like statistics, and that although figures will not lie, liars will figure, a rather crude way of expressing the fact that statistics are frequently so carelessly gathered as to be worthless as a source of information, or that they are sometimes so juggled as to apparently substantiate conclusions far removed from the truth.

In the paper under consideration, however, the figures seem to have been gathered with great, or even unusual care, and as far as we are able to judge from the context they have been fairly and honestly tabulated.

The sheets sent to physicians contained lists of the vegetable drugs upon which answers were required, and contained nothing that could have influenced those to whom they were sent to answer other than according to their own opinions as to the value of the drugs pronounced upon. That Prof. Lloyd endeavored to reach a list of physicians sufficiently large to be fairly representative

of the whole profession is evidenced by the fact that something like three thousand dollars was expended in postage alone. From the surrounding circumstances, therefore, we are justified in assuming that the figures in the tables fairly represent the consensus of opinion of practicing physicians of the country as to the value of the drugs passed upon. If any error is made in drawing conclusions from the results, the fault cannot fairly be charged to Prof. Lloyd.

The first surprise is reached when we examine the replies submitted by a selected list of physicians, none of whom were Eclectic, and in which the drug echinacea is given first place among valuable remedies, being ranked many degrees above such old pharmaceutical favorites as nux vomica, digitalis, ipecac, cannabis, colchicum, colocynth, ergot, rhubarb, and senna, while in the same list certain other official celebrities, as columbo, guaiacum, jalap, cinchona, and a number of lesser note, are thrown into the discard, not being favorably mentioned by a single physician who replied to the queries.

Some less prominent, or as many of us have been taught, quite unimportant drugs, as bryonia, pulsatilla, cactus, chionanthus, thuja, and even dioscorea, collinsonia and crataegus, are favorably mentioned with such frequency as to bring them well within the therapeutic "400," while others of undoubted respectability are either not mentioned at all, or are set away down toward the zero point in value.

If these answers had been furnished by Eclectic physicians alone, it might have been said that such vagaries were to be expected from the adherents of a sectarian school, but when the answers come from physicians whose regularity and orthodoxy are beyond doubt, we are moved to exclaim with Truthful James:

"Do I sleep, do I dream?
Do I wander and doubt?
Are things what they seem
Or is visions about?"

Nor are we able to extract any satisfaction from the list of drugs esteemed of value by Eclectic physicians. As was to be expected, some differences appear, but not sufficient to make any very material change in the list. On the whole there is a surprising similarity in the two lists; in fact, the Eclectics appear to be slightly more regular than the regulars themselves, since twelve of the first fifteen named Eclectics' favorites are U. S. P. drugs, while only eleven of the first fifteen named in the other list are recognized by that authority.

In the Eclectic list gelsemium is given first rank, and echinacea the fifth, an exact reversal of their positions in the non-Eclectic list, while aconite, bryonia, macrotys, belladonna, and numerous others occupy either the same or nearly the same rank in both lists.

In only a few cases is the difference in rank sufficient to be termed striking, the more notable being podophyllum, ranked 18 by Eclectics and 28 by the non-Eclectics; ergot ranked 22 by the Eclectics and 32 by the non-Eclectics; and digitalis ranked 24 by the Eclectics and 14 by the non-Eclectics. In the majority of cases the difference in rank in the two lists does not amount to more than

three to four points, certainly a remarkably close correspondence when we remember how doctors of different schools are reputed to disagree.

If Prof. Lloyd's work had stopped with these two lists, we might have adopted the hypothesis of a carefully hand-picked jury to explain the unexpected verdict and the placing of such therapeutic ragamuffins as echinacea cactus, et al., high above such old and undoubtedly respectable medicaments as nux vomica, digitalis, ipecac, etc., but just as we are about consoling ourselves with this reflection, Prof. Lloyd springs another list compiled from over 10,000 replies to questions addressed to 30,000 physicians of all schools, widely distributed over the United States, and who are as perverse and unorthodox in their opinions as to the relative value of vegetable drugs as are the physicians who replied to the first two lists. In some respects it is a case of worse and more of it.

Cactus, which is placed in the 12th rank by the Eclectics and in the 9th rank by the non-Eclectics, is given first rank in the last list, being named as a valuable drug by 6239 out of 10,000 physicians who replied to the questions, a clear plurality of over 600 votes above hydrastis, the next most popular candidate.

Echinacea, however, is reduced to the 12th place, while twelve out of the first named fifteen drugs are official.

Many other equally striking anomalies—judged by our preconceived ideas—appear from a study of these lists showing the relative esteem in which the various vegetable drugs are held by practitioners, but for these the reader is referred to the original paper. As Prof. Lloyd says, "a study such as this leads to distractive confusion, and a shattering of ideals."

One conclusion which we think may safely be drawn, is that physicians are guided by their own experience in the selection of vegetable drugs, rather than by the recognition or non-recognition of such drugs by the Pharmacopœia, and also that having observed favorable clinical results from their use, they are not deterred from prescribing them by the fact that chemical examination has failed to show the existence of any definite active principle to which such favorable result could be attributed.

If physicians are to be credited with the ability to correctly interpret the results obtained in their daily practice, numerous teachers of materia medica and therapeutics need to make an early revision of their lectures and text books.

J. H. BEAL.

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PARCELS POST UNDER THE ZONE SYSTEM.

THE beginning of the year witnessed the inauguration of the Government's experiment of parcels post under the "zone system," whereby the postage upon mail transported merchandise is, within certain limits, apportioned to the distance through which it is transported.

This, of course, falls far short of the desires of the advocates of the flat-rate-for-everywhere plan, which, for example, would have enabled the New York mail order house to have delivered goods within ten miles of Seattle at the same rate as the Seattle retailer could have delivered them at the same place.

It was admitted on all hands that under the flat rate the Government would lose money on the long hauls, but it was claimed that the loss would be more

than met by the profit on the short hauls. Thus the practical result would have been to increase the profits of those who had a nearly complete monopoly of the long hauls (the big mail order houses in the cities) at the cost of those whose shipments were mostly short hauls—or the small retailers in the rural districts.

Unfortunately, many advocates of parcels post never took the pains to acquaint themselves with the true inwardness of the movement, and consequently were inclined to criticise the retailer for blindly standing in the way of cheaper and quicker methods of transportation. But the retailer was not as dull as his critics thought him. He was not opposed to the cheaper transportation of merchandise by mail, but only asked that the burden and profit should be equally distributed, so that those who shipped the longest distances should pay in proportion to the services received. In other words, he objected to a plan which, though seemingly for the benefit of all, was really a cunningly devised scheme that would have operated mainly to the benefit of a single class of dealers.

As it turned out, the retailers' opposition to the flat-rate plan was successful; in fact, almost too successful, since the rates finally established are, for distances beyond the first 50-mile zone, but little better than the prevailing express rates. This affords the advocates of the flat rate an opportunity to charge that parcels post is not being given a fair trial, and to press their original proposition, i. e., to carry parcels all distances at the same rates. Bills to make this change are still before the Congress, and are being pressed by the same powerful lobby that was behind the original movement. These efforts should be vigorously resisted until experience with the present form of parcels post enables us to determine what amendments are needed to make it an effective method for the transportation of merchandise, without becoming an instrument for the enrichment of a small but powerful group of special interests.

It will also be good policy for druggists to familiarize themselves with the present form of the plan, and utilize every opportunity for using it to the benefit of their own business.

The present rates are as follows:

	First Lb. or fraction	Each Additional Lb. or fraction	Limit 11 Lbs.
Rural Route and City Delivery.....	.05	.01	.15
50-mi. zone	.05	.03	.35
150-mi. zone	.06	.04	.46
300-mi. zone	.07	.05	.57
600 mi. zone	.08	.06	.68
1000-mi. zone	.09	.07	.79
1400-mi. zone	.10	.09	1.00
1800-mi. zone	.11	.10	1.11
Over 1800 mi.....	.12	.12	1.32

The limit of weight is 11 pounds, and the *combined* length and crosswise girth must not exceed 72 inches.

Poisons or habit-forming drugs, or preparations containing them in material quantities, intoxicating liquors, explosives or inflammable articles, and articles intended or adapted for immoral use are unmailable.

J. H. BEAL.

A NEEDED PIECE OF LEGISLATION.

MEMBERS of the American Pharmaceutical Association and pharmacists generally have now an exceptional opportunity to help materially a large and deserving body of pharmacists who constitute the personnel of the non-commissioned officers of the Army Hospital Corps. Several hundred of these army pharmacists are members of our Association. They are unfairly discriminated against both in rank, pay and in opportunity for advancement under the present constitution of the Army Hospital Corps. Our Association has undertaken to secure just and fair treatment for these men along the lines of the recommendations of the Surgeon General of the United States Army as contained in his memorandum to the chief of staff of August, 1911, and to this end has secured the introduction into Congress of the Hughes-Bacon bill, indexed as S. 5725 and as H. R. 22263, and now under consideration in the Military Committee of both Senate and House.

This bill was printed in the Journal and commented upon by Dr. George F. Payne, in May, 1912. Every member of the Association is earnestly requested to write at once to the senator from his state and the congressman from his district and urge the passage of the Hughes-Bacon bill. As this is a short session of Congress we must act quickly if we hope to accomplish anything. Do not put this aside, but write today to your congressmen and senators.

W. B. DAY.

Section on Scientific Papers

Papers Presented at the Sixtieth Annual Convention

OUTLINE OF MICRO-ANALYTICAL METHODS FOR FOOD AND DRUGS LABORATORIES.

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(Continued from p. 1338, December, 1912.)

There are a number of chemical tests giving color reactions which can be done conveniently by the micro-analyst, as the boric acid reaction with curcuma, the $H_2 SO_4$ color reaction with some barks, capsicum, guaiac, resin, cubeb, etc.; the $H_2 SO_4$ plus formaldehyde color reaction with morphine; the ferric chloride color reaction with salicylic acid; etc. These tests should be used when, in the judgment of the analyst, they may serve to give better information regarding the identity, purity and quality of the drug.

II. METHODS USEFUL IN THE EXAMINATION OF VEGETABLE FOOD PRODUCTS.

1. *Lagerheim's Test for Benzoic Acid.* Place a drop or two of the suspected liquid or semi-liquid food substance into a deep watch crystal of one inch diameter. Place over it a clean dry slide. Now hold the watch crystal over a flame (alcohol lamp*) until the substance (as wine, vinegar, catsup, jam, jelly, etc.), comes to an active boil. The steam vapor, carrying with it the benzoic acid, is condensed on the slide. Remove the slide and set it aside until the condensed moisture has evaporated; very moderate heat may be used to hasten evaporation. Examine under the microscope, whereupon the benzoic acid crystals may be seen, provided any were present. The test is delicate, very reliable and very few substances interfere with it. It is very pronounced in the presence of 0.01 per cent of benzoic acid or of sodium benzoate.

2. *Salicylic Acid Test.* Made like the benzoic acid test. The crystal formation (plates) is very pronounced in dilutions of 1 : 1000. After having examined the crystals under the microscope, add a drop of weak solution of ferric chloride to the crystals upon the slide, whereupon a blue coloration develops. Boric acid is likewise deposited by sublimation, but the test is not as satisfactory as those for benzoic acid and for salicylic acid.

3. *Curcuma Thread Test for Boric Acid.* Boil 5 grams of powdered curcuma in 10 cc. of alcohol. To the evaporated alcoholic extract add a little soda and several cc. of 50 per cent. alcohol. In this place paper (bast fiber), cotton or linen threads and bring to a brisk boil for a few moments. Remove threads and dry between blotting paper, lay them in a very weak solution of sulphuric acid and rinse in water. When dry the threads should be a golden yellow.

The test for the presence of boric acid (also for borax) is made as follows: Dip the end of a prepared thread in a 10 per cent solution of hydrochloric acid and allow to dry. Lay

*Alcohol lamp is preferred because the flame is small and the heating is quickly done.

the thread on a slide, cover with cover glass and examine. It should be of a reddish brown color. To the edge of cover glass apply a droplet of a 10 to 13 per cent. solution of sodium carbonate, followed by a droplet of the suspected solution. In the presence of boric acid, the thread is colored blue, which coloration remains for a longer or shorter period and then changes to gray and violet. The test is a very delicate one and is not hindered by the presence of sodium chloride, magnesium sulphate and aluminum sulphate. Strong solutions of phosphoric acid, silicic acid, calcium chlorite and magnesium chlorite, interfere with the reaction more or less.

4. *Formaldehyde Test.* Concentrated hydrochloric acid added to weak solutions of formaldehyde (1 : 5000) or substances containing formaldehyde, forms stellate clusters having a somewhat crystalline appearance. The formaldehyde can be deposited on a slide by sublimation (as for benzoic acid) and the acid added. The stellate clusters appear upon evaporation of the hydrochloric acid. The test requires further verification to determine its value.

5. *Sulphurous Acid Test.* Moisten starch paper with a very dilute solution of potassium-iodide iodine solution which colors it blue. In the presence of the merest trace of sulphurous acid the paper is decolorized. Do not use heat in this test.

6. *Iodine Reaction.* The color reaction of starch with N/50 iodine solution is of great importance in the examination of fruit products, such as jams, jellies, catsups, etc., as it shows whether or not ripe or green fruits and juices of unripe fruit were used, and whether or not starch paste may have been added as a filler or thickening agent. As is known, green fruits generally contain more or less starch, whereas ripe fruits are quite free from starch. The reaction may be observed only in the fruit pulp cells, indicating the presence of unripe fruit, or it may be limited to the non-cellular portions of such substances as jams and jellies, indicating the use of fruit juices obtained from unripe fruits.

7. *Microscopical Examination of Bacteria and Metals by Direct Sunlight.* Some recent experiments would indicate that very minute quantities of certain minerals as iron, copper, mercury, and a few others, can be detected in liquids and semiliquids (in the form of metallic hydroxides) when examined (on slide mounts) by means of direct sunlight. All transmissible light must be cut off. The actual value of this mode of testing must be determined by further experimentation.

Direct sunlight can also be used in making bacterial counts in liquids, using the Thoma-Zeiss hemacytometer (Turck ruling). The bacteria are readily recognizable on the dark background, standing out far more clearly than in the usual examination by transmitted light, because of the more pronounced color contrasts.

The possibilities in the use of direct sunlight in microscopical work are very promising and should receive more serious consideration.

There are certain micro-chemical color reactions, other than those already mentioned, which are of great value in determining the presence of impurities or adulterants in liquids and semi-liquids. The methods as perfected by F. Emich depend upon the use of cotton fibers treated with certain chemicals which convert the metallic compounds into the sulphides. The prepared threads can be readily transferred to the several solutions used and the color and precipitation effects can be observed under the microscope. The following are the more important reagents and reactions:

1. *Cotton Threads for Metal Tests.* Dip absorbent cotton threads alternately into 15 per cent solutions of sodium sulphide and zinc sulphate, pressing between blotting paper, and air-dry each time.

The threads thus prepared should assume a deep black color with a 1 per cent solution of silver nitrate. They may be kept for a long time and are used to demonstrate the presence of As, Sb, Au, Pt, Cu, Hg, Pb and Bi, in various chemical compounds.

2. *Ammonium Sulphide Vapor Test.* Place a few fibers of absorbent cotton into a drop of the suspected solution and allow the moisture to evaporate. Suspending the threads in the vapor of ammonium sulphide will indicate the presence of Cd, Hg, Ag, Fe, Co and Ni (dark to black coloration).

The prepared threads are used in the following tests:

a. *Arsenical Test.* Dip a sodium sulphide thread into the suspected solution and allow to dry. In the presence of 0.008 per cent. arsenic there is a distinct yellowish coloration, due to the sulphide of arsenic formed in and upon the threads. The arsenical threads will also show the characteristic reactions with hydrochloric acid, ammonia and ammonium sulphide by bringing a drop of the reagent in contact with the thread upon the slide.

b. *Zinc Test.* Dip cotton fibers into the suspected solution, allow the moisture to evaporate, and then dip the threads into a solution of gold chloride. A violet coloration develops which remains in the presence of acids but vanishes in the presence of chlorine water, indicating the presence of zinc chlorite. The reaction is appreciable in the presence of 0.003 μg of zinc chlorite, whereas in the form of the sulphite, 0.1 μg of zinc are required to show the reaction.

c. *Antimony Test.* Dip a sulphide thread into the solution, allow to evaporate and expose to the vapor of ammonium sulphide. If the solution to be tested contains considerable hydrochloric acid, sulphide of antimony is formed upon evaporation. Inasmuch as zinc oxide is not precipitated upon the sulphide thread, simultaneous tests may be made for arsenic and antimony.

d. *Gold Test.* Gives a brown coloration with the sulphide thread, which disappears upon prolonged exposure to ammonium sulphide, more quickly on exposure to chlorine, bromine and sodium hypochlorite. The threads which have been decolorized with chlorine are colored blue to black with iron chlorite and violet to red with zinc chlorite.

e. *Silver Test.* A neutral or faintly acid silver nitrate solution gives a brown to black coloration with the sulphide thread, the depth of the reaction depending upon the concentration of the solution. The fibers can be decolorized by placing in sodium hypochlorite, and the color can be restored by means of zinc chlorite or an alkaline solution of grape sugar. Sulphuric acid will again decolorize.

f. *Mercury Chloride.* Cotton threads dipped into a solution containing mercuric chloride and exposed to the vapors of ammonium sulphide or ammonia, are colored black. The color is quite permanent in the presence of acids. A sulphide thread is colored yellow in neutral solution of mercuric chloride, changing to black in the ammonium sulphide vapor.

g. *Lead Test.* Neutral lead solutions (lead nitrate) turn the sulphide threads yellow and black on prolonged exposure to ammonium sulphide. In acid solutions the color reaction with the sulphide thread is black. The yellow coloration is promptly changed to black upon exposure to ammonium sulphide, or when placed in weak sulphuric acid (1:15). The latter reaction distinguishes between lead and mercury, as the yellow coloration of the mercury is changed very slowly with dilute sulphuric acid.

h. *Bismuth Test.* Solutions color the sulphide thread reddish-brown. Bromine causes the color to disappear. Potassium dichromate causes a yellow coloration, while alkaline solutions of zinc chlorite produce a black coloration. Lead solutions are not reduced by alkaline solutions of zinc chlorite.

i. *Iron Test.* Ammonium sulphide vapor gives a black precipitate which is soluble in weak solutions of hydrochloric acid. Potassium ferrocyanide gives a blue coloration.

j. *Copper Test.* Solutions of copper sulphate give a brown coloration to the sulphide thread, which color remains in 10 per cent. hydrochloric acid, but disappears on exposure to bromine vapor. The threads which have been bleached with bromine give the copper ferrocyanide reaction when placed in an acidulated solution of potassium ferrocyanide.

The following table from the work by Koenig gives the relative sensitiveness of the tests above described:*

Elements in Combination Valency	Reaction	Limit (mg x 10^6)	Comparative Sensitiveness
Bo‴	Curcuma thread	0.1	1 in 33,000
As‴	Sulphide thread	10	1 in 2,500
Sb‴	Sulphide thread	1	1 in 40,000
Sn″	Violet color with sulphide thread	3	1 in 20,000
Au‴	Sulphide thread—brown, purple	3	1 in 22,000
Pt‴	Sulphide thread	8	1 in 6,000
Cu″	Sulphide thread+ferrocyanides	8	1 in 4,000
Ag′	Sulphide thread+Ag	5	1 in 22,000
Hg′	NH_3 vapor	8	1 in 25,000
Hg″	Sulphide thread	5	1 in 20,000
Pb″	Sulphide $PbCrO_4$	8	1 in 13,000
Bi‴	Sulphide+Chromate+Bi	8	1 in 9,000
Cd″	(NH_3SH) vapor	6	1 in 9,000
Fe″	(NH_3SH)—blue	8	1 in 3,500
Co″	NH_3SH or Nitroso—beta—naphthol	0.3	1 in 100,000
Ni″	NH_3SH	0.3	1 in 100,000

Certain factory food products, as jams, jellies, canned whole fruits, catsups, preserves, etc., generally contain large numbers of yeast cells, bacteria and mould. The examination of fruit products of the kinds named, as prepared by the careful housewife, shows that such organisms need not be present in any considerable numbers. Yeast cells, mould spores and bacteria occur in small numbers upon all sound fruits, but the active growth and development of the organisms does not take place in normal fruit. Decayed and decomposed fruit does contain large numbers of the organisms named, and active yeast fermentation is apt to be initiated in all exposed, non-sterilized and insufficiently sterilized fruit pulps and fruit juices.

Most of the factory samples of fruit products thus far examined, showed the presence of abundant yeast cells, mould and bacteria, indicating the use of fruit, fruit pulp, fruit refuse and fruit juices which were decayed prior to manufacture or which underwent fermentative and other decomposition changes prior to or during manufacture. Swollen cans are quite rare in the actual market, as they are culled at the factory before shipment. However, occasionally a swollen can finds its way into the pure food laboratory.

The organisms named prevail in varying amounts in different products. Bacteria are apt to predominate in catsups and pastes, yeasts in jams and jellies, moulds in such fruit as blackberry, strawberry, plums, rain-split cherries, apple

*The comparative degree of sensitiveness of the different chemical compounds concerned in the color reactions above described and tabulated, is indicated by the number of cubic centimeters in which one gramme of the substance in solution is still appreciable. The actual limit, determined experimentally, is indicated in terms of milligrammes, that is 1/1000 mg., represented by μg. Expressing the comparative sensitiveness (CS) in a formula we have

$$CS = \frac{\mu g \text{ limit}}{\text{amount limit}} \times \frac{\text{molecular weights}}{\text{combination valency}}$$

or to give the example for boron, we have

$$CS = \frac{0.000001}{0.00000006} \times \frac{59}{3} = 33000.$$

refuse and in fruit refuse generally; while smuts and their spores are particularly likely to occur in figs and fig jams. If these organisms (dead) occur in considerable numbers it is conclusive evidence that other than fresh fruits or fruit juices were used. The presence of numerous dead yeast cells (2-50,000,000 per cc.) is evidence that the material was undergoing alcoholic fermentation prior to or at the time of manufacture. Since yeast fermentations are usually accompanied by considerable bacterial activity, the presence of some bacteria may be expected. Occasionally a sample of jam comes to hand showing the presence of abundant living yeast cells, as indicated by the bulging of the can, and when opened, by the vinous odor, presence of bubbles, and as seen from the microscopical appearance of the actively budding cells.

Occasionally factory samples are found which are almost as free from organic contamination as are the products of the careful housewife, which is conclusive evidence that manufacturers can, if they will, put up wholesome fruit preparations. The following methods of making microscopic counts and provisional maximum limits are submitted for consideration:

1. *Yeast Counts.* The Thoma-Zeiss hemacytometer with Turck ruling, used with No. 2 ocular and No. 5 objective, will be found very convenient. It is not necessary to make dilutions. Countings can be made readily up to 50,000,000 per cc. without dilutions. If the yeast cells are so numerous as to require dilution, the article is presumably unfit for consumption. Three or four mounts of each fruit product should be examined, and ten areas (1/25 sq. mm. or 0.04 sq. mm.) should be counted in each mount.

Living yeast cells can be distinguished from the dead cells by their larger size, uncolored cell-walls, presence of vacuoles and evidence of active budding. Dead yeast cells shrink as the result of osmotic outflow of cell-sap, and the cell-walls take up some of the fruit colors, including slight coloration.

2. *Bacterial Counts.* As in yeast counts, the hemacytometer is used. The efforts to determine the presence of bacteria in fruit products and to count them, have thus far given rather unsatisfactory results because of the great variety of organic particles (as proteid and plasmic granules and minute starch granules), and even crystalline bodies, which may be mistaken for cocci or bacilli. The most satisfactory method is to centrifugalize from five to ten grammes of the substance dissolved in distilled water and make stained mounts of the sediment. Dead bacteria stain only slightly, organic non-bacterial fragments stain readily, whereas crystalline particles do not stain at all. The starch granules will, of course, be recognized by the blue coloration with N/50 iodine solution. The skilled microscopist has no difficulty in recognizing the larger bacilli in the various food substances provided they are present in considerable numbers (50,000 per cc. or more). Active motion of the suspected rod-shaped particles is, of course, conclusive evidence of the presence of living bacteria. The bacterial content of some substances, as tomato pastes, may be so high as to necessitate diluting. Usually a dilution of 1-10 is sufficient.

3. *Bacterial Cultures.* The only satisfactory method for determining the number of living bacteria in food products, including spore forms, is by means of the usual dilution plate cultures. For this purpose the necessary laboratory facilities must be provided. The full method should include the determination of certain pathogenic forms as the colon group of bacilli, the typhoid bacillus, and a few other objectionable types of bacilli. The maximum number of living bacilli (including spores) permissible in food substances will depend on the kind, and the limitations in that regard should be as for potable water, including mineral waters, following the methods outlined by the Society of American Bacteriologists. The purely quantitative or numerical limitations of non-pathogenic living bacteria will depend upon the character of the food substance. In jams, jellies, marmalades and similar products, the upper limit should not exceed 1,000,000 per cc., whereas in catsups the maximum number may be fixed at 5,000,000 per cc. This matter, however, requires further careful consideration.

4. *Mould Counts.* **Mould in food substances is always objectionable, and the presence of such organisms usually indicates the use of mould-infested fruit, though the product may become further infested in manufacture or even after it is ready for shipment or while in storage. However, as moulds are highly aerobic, there is little growth in well-filled, well-sealed containers, but occasionally there is a very extensive growth on the top of the food product, as jam, jelly, etc., in containers which are not quite filled and which are not well sealed, or when the contents are insufficiently sterilized.**

Since all species or kinds of moulds are objectionable, the maximum limits are purely numerical or quantitative. The methods of making counts consist in the use of a stage slide cell containing a definite amount of the well-mixed substance

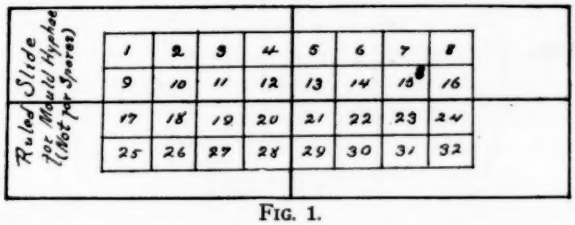

FIG. 1.

Fig. 1. Ruled slide for counting mould hyphae in jams, jellies, canned fruits and similar substances. A small spoonful (capacity of 0.5 or 0.25 cc.) of the thoroughly mixed sample is spread on the slide, within the ruled area, and covered with a rectangular cover glass, or an ordinary slide. The counting is done by means of the low power (No. 2 ocular and No. 3 objective). Because of the amount of material placed on the slide, the dimensions of the areas and the low power used, spore or yeast cell counting is not practicable with this device. The mechanical stage will be very useful in making the counts.

and counting the number of hyphal fragments and hyphal clusters (including the spores) contained therein. The hemacytometer cannot be used. Attempts to use the Rafter counting device proved unsatisfactory, first, because of the depth of the cell (1 mm.), and because of the fact that the use of dilutions is necessary, which is time consuming. Several satisfactory methods may be used. By means of a spoon of 0.5 cc. or 0.25 cc. capacity, take up a well-mixed sample and spread it out on a slide ruled in numbered squares (Fig. 1), and cover with cover glass, and then count all of the hyphae direct, under the low power of the compound

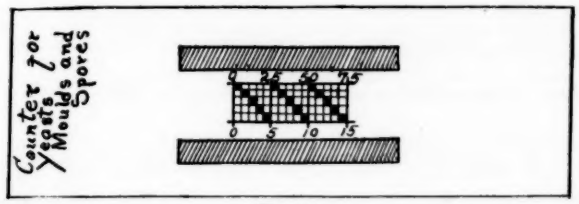

FIG. 2.

Fig. 2. Counting apparatus for mould spores, mould hyphae and yeast cells. The rulings on the slide are 0.04 sq. mm., 1 sq. mm. and 25 sq. mm. On either side of this ruled area are metal slips 0.2 mm. thick, so that the entire capacity of the space within the ruled area is 15 cm. or 0.015 cc. A bit of a thoroughly mixed fruit product, as jam, jelly or catsup, is placed on the slide in the ruled area and covered with a rectangular (No. 2) cover glass. Slight pressure is required to make the cover rest on the metal slips. The counting is done in areas entirely filled (from slide to cover glass) by the substance mounted. The larger areas (25 and 1 sq. mm.) will be most convenient for counting mould hyphae, while the smaller areas (0.04 sq. mm) are used to count mould spores and yeast cells, provided the number present does not exceed 10,000,000 per cc. Should the number of yeast cells or spores exceed 10,000,000 per cc., it will be necessary to make dilutions (1-10). A No. 2 ocular and a No. 5 objective are to be used. If the spore count is to be omitted, only the low power (No. 2 ocular, No. 3 objective) need be used.

microscope. As a rough-and-ready method this is satisfactory, but the magnification used does not make spore counting possible. The mechanical stage is required when making the counts.

Quicker and more accurate countings can be made by means of a ruled slide cell, as shown in Figure 2. This device, furthermore, does not absolutely re-

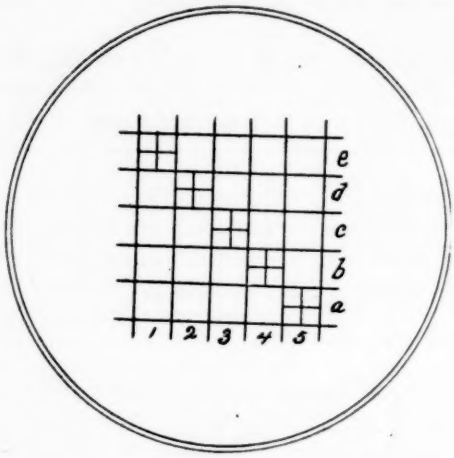

FIG. 3.

Fig. 3. Ocular scale for making yeast, spore and bacterial counts in liquids and semi-solids, as jams, jellies, catsups, preserves, etc. The measuring values of the areas (in microns or micro millimeters) of the squares, for low and high powers, are determined by means of the stage micrometer. Ordinary slide mounts are used, the amount of material being just enough to represent the approximate diameter of the yeast cell, spore cell or bacterial cell. That is, the cover glass must be pressed down sufficiently so as to bring it in capillary proximity to slide. In order to do this the amount of material placed on the slide or cover must be just enough or somewhat less than is required to occupy the capillary space between cover and slide. This precludes, from the mounting, all coarse material and larger solid particles, as sand, larger cells, as some sclerenchyma, etc. With some practice it is possible to make slide mounts in which the variation error does not exceed five per cent. The counts are made in one plane or optical section. The method is sufficiently reliable for all practical purposes and has numerous advantages, as will be found on comparing it with other methods.

The application of the method is as follows:

Let x=the linear value of the ocular rulings in terms of millimeters, and,
n=the number of yeast cells, spores, bacteria, etc., in x^2, then
$n\sqrt{n}$=the number of organisms in x^3, and

$$\frac{n\sqrt{n}}{x^3} = \text{the number of organisms in one cubic millimeter, and}$$

$$\left(\frac{n\sqrt{n}}{x^3}\right) 1000 = N,\ N \text{, representing the number of organisms in one cubic centimeter.}$$

To give a concrete example we will suppose that with the high power x=0.09 mm., and that based upon the counts of ten or more squares in each of the two or three mounts, n=10; then $10\sqrt{10}$=30+, and

$$\frac{30}{0.000729} = 41{,}152, \text{ and } N = 41{,}152{,}000$$

quire the use of the mechanical stage, though it will be found convenient. The counting apparatus, shown in Figure 2, may be used with either low or high power (No. 2 ocular with either No. 3 or No. 5 objective). Because of the fact that the ends of the slide cell are open, cleaning is easy, and mounts can be prepared quickly. The use of the ocular scale and the direct slide mounts, as ex-

plained under Figure 3, is much simpler and quicker than the use of the Thoma-Zeiss hemacytometer, and gives results which are perfectly satisfactory for all practical purposes in the examination of food products.

The maximum number of yeast cells, moulds and bacteria permissible within the intent of the pure food and drugs act must be governed by several conditions. All products made from fresh fruits and fresh fruit juices, without the addition of fermentation products as fruit vinegar, wine, cider, etc., should not contain more than 1,000,000 per cc. each of yeast cells or of bacteria, and not more than 50,000 per cc. of mould spores and hyphal fragments and hyphal clusters. The fruit products of the careful housewife contain far less organisms than is indicated by these numbers. Apple butter or apple marmalade is sometimes prepared with fresh cider—that is, with apple cider which is undergoing active fermentation. Such a product may contain many more than 10,000,000 dead yeast cells per cc. If the cider is, however, first strained through several layers of muslin, through cotton or felt paper or cleared by the centrifugal method, before adding it to the apples, the number of yeast cells is in all probability far less than 1,000,000 per cc. In the above case the label should state that apple butter is "prepared with apple cider," as it is otherwise assumed that only unfermented fruit ingredients are used. Fruit products prepared with fruit vinegar, such as catsups, prepared mustards, etc., may contain 5,000,000 acid-forming microbes and yeast cells per cc., but in all probability not more, so that 5,000,000 yeast cells or bacteria per cc. is a reasonable maximum limit. No doubt this limit can be reduced as the canners learn the need of greater care in manufacture. Often the trouble lies in the fact that the decayed fruit is not carefully culled, and again the pulped material is left too long in the pulping or mixing tanks, or the tanks are not properly cleaned and scalded.

It is perhaps impracticable to cull out every decayed or mouldy fruit, but any one who has witnessed the operations in some of the fruit canneries is satisfied that conditions can be and should be improved upon. A careful culling of decomposed fruit would result in a marked reduction in the number of mould hyphae, mould spores, and rotting bacteria present. Manufacturers should be warned, and urged to perfect their methods, no matter what the cost may be. Improved methods no doubt would mean an increase in the price of the manufactured article,nevertheless we should have and we can have a wholesome fruit product.

The methods of micro-analysts whether in private, commercial or government laboratories, should be quite uniform. Much could be done to bring this about if the analysts were to meet for the purpose of comparing methods and results, as has already been suggested. Uniform blank report forms should be adopted and used in the micro-analytical laboratories, somewhat like those used by chemists. It cannot, however, be denied that the efficiency of the work done depends largely upon the ability, judgment and experience of the analyst. The novice is apt to experience only utter confusion, when left to himself, even when examining such simple substances as ground pepper, ginger, flour and starches. The beginner may worry over one article for an entire day, and even then he may not be certain of the findings, whereas the experienced analyst examines from twenty to

sixty samples in the same time with full confidence in his findings and conclusions.

The reports of the micro-analysts may be made according to the following groups:

I. Drugs of vegetable origin, including dry or solid food products of vegetable origin.

II. Liquid or moist food products of vegetable origin (canned and preserved foods generally).

III. Bacterial examinations of liquids, etc.

There should be a special blank report card for each group of substances, arranged as follows:

FORM No. I.

No.....(I. S., Laboratory or other serial number).
Label .....
.....
Sample received..... Sample examined.....
Condition of wrappings and seals.....
Organoleptic Tests .....
Consistency or Feel.....
Color .....
Odor .....
Taste .....
Adjunct Tests .....
Sand (beaker test).....%
Ash .....%
Acid-insoluble ash .....%
Special tests .....
.....
Microscopical findings.....
.....
.....
.....
Conclusions .....
.....
.....
.....
.....Analyst.

FORM No. II.

(No. label, dates, condition of seal and organoleptic tests, as for form No. I.)

Adjunct Tests.
Sublimation tests for.....
Benzoic acid .....
Salicylic acid .....
Boric acid (curcuma thread).....
Iodine reaction .....
Intracellular .....
Extracellular .....
Special Tests .....
.....

Microscopical findings.
General .....
.....
.....
Cytometric counts.
Dead yeast cells.....per cc.
Living yeast cells.....per cc.
Bacteria .....per cc.
Mould (hyphal fragments and hyphal clusters).....per cc.
Mould spores .....per cc.
Smut spores .....per cc
Conclusions .....
.....
.....
.....Analyst.

FORM NO. III.

Bacteriological Examination.

I. Direct Count. (Thoma-Zeiss Hemacytometer with Turck ruling.)
1. Bacilli per cc.....
2. Cocci per cc.....
II. Plate and Tube Cultures. (Lactose-Litmus-Agar).
1. Temperature differential test.
a. (20° C.) colonies per cc.....
b. (38° C.) colonies per cc.....
2. Color differential test.
a. Pink or yellow colonies per cc.....
b. Not pink or yellow colonies per cc.....
3. Gelatine liquefying colonies per cc.....
4. Indol reaction (±).....
5. Neutral red reduction (±).....
6. Gas (hydrogen) formula.....
7. Gram stain behavior (±).....
III. Special Tests .....
.....
.....
IV. Conclusions .....
.....
.....
.....Analyst.

We may give an example of a report as follows:

FORM NO. II.

Lab. No. *462.*
Label: *Pure currant jelly. Made by Smith, Janes & Co., Nantucket, Wis.*
Sample received *August 5, 1910.* Sample examined *August 5, 1910.*
Condition of seals: *Good, unbroken sample.*
Organoleptic tests: *Not conclusive.*
Consistency or feel: *Poorly jellied.*
Color: *Normal for Currant jelly.*
Odor: *Faint, somewhat disagreeable.*
Taste: *Not characteristic, bitterish, quite acid.*

Adjunct Tests.
Sublimation tests for
Benzoic acid: *Negative.*
Salicylic acid: *Very marked.*
Boric acid (curcuma thread): *Negative.*
Iodine reaction: *Very marked.*
Intracellular: *Negative.*
Extracellular: *Positive, very marked.*
Special Tests: *Salicylic acid color reaction, with ferric chloride very marked.*
Microscopical Examination.
General. *Some apple tissue (window cells and pulp cells) and currant tissue (sclerenchyma) present. Added wheat starch about 5 per cent.*
Cytometric counts.
Dead yeast cells, *30,000,000*.....per cc.
Living yeast cells, *none*.....per cc.
Bacteria, *6,150,000* .....per cc.
Mould (hyphal fragments and hyphal clusters) *20,000**per cc.
Mould spores, *5,000*.....per cc.
Smut spores, *none*.....per cc.
Conclusions: *Misbranded and adulterated with apple and with wheat starch and made from fermented and decomposed material, preserved with salicylic acid. Not fit for human consumption because of the quantity of yeast, mould and bacteria present.*

JOHN DOE, Analyst.

The great advantage of the micro-analytical work as compared with chemical work lies in the facts that small amounts of the substances are used for analysis, the equipment is comparatively inexpensive and the results are quickly attained. From twenty to forty and even sixty samples of simple spices can be examined in one day, from five to twelve samples of powdered vegetable drugs, cocoas, chocolates, flours, meals, etc., and perhaps an equal number of jams, jellies, etc.

Summarizing Suggestions.

The following concluding suggestions are submitted for consideration and action.

1. That there be a classification of those food and drug products which should be subjected to microscopical examination in food and drug laboratories.

2. That the compound microscopes intended for use in food and drug laboratories be equipped with eye-piece micrometer, polarizer, and four objectives (Nos. 3, 5, 7 and 1/12 in. oil immersion). The No. 5 being necessary for use with the mould counter and the hemacytometer, and the oil immersion objective for occasional bacteriological work.

3. That a mould counter, as described in Fig. 2, be adopted.

*This number of hyphal clusters and hyphal fragments would correspond with hyphal clusters and fragments in about 80% of the smallest areas (0.04 sq. mm.) of the proposed mould counting apparatus shown in Fig. 2. The comparative quantity of mould establishes the article's unfitness for human use to a more marked degree than does the yeast, although there are pathogenic and otherwise objectionable yeasts. Moulds are quite generally objectionable either on account of toxin-like substances formed or because of objectionable gases or flavors developed. Many of the moulds are pathogenic, producing skin and stomach disorders.

4. That a uniform tissue terminology be adopted.

5. That the micro-analysts adopt the following reactions and tests described in this report. Other tests to be added as soon as their value has been proven.

a. The mace test.
b. Conium test.
c. Grahe's cinchona test.
d. Ash determination.
e. Sublimation tests for benzoic acid and for salicylic acid.
f. Curcuma thread test for boric acid.
g. Iodine test for starch.

6. That organoleptic testing be recognized as valuable adjuncts to the microscopical examination.

7. That the micro-analytical laboratories be equipped to do the necessary bacteriological work.

8. That the micro-analytical laboratories be equipped to make official test-tube, beaker and other simple chemical purity and quality tests, recognized and described in the United States Pharmacopoeia, National Formulary and in the official methods of the Agricultural Chemists.

9. That a tentative maximum numerical limit for yeast cells, mould hyphae, mould spores and bacteria in food products and in liquids, be adopted.

10. The fineness of powdered vegetable drugs intended for medicinal use should be stated on the label. Powdered vegetable drugs of which the fineness is not in accord with the pharmacopoeial requirement, should be declared not up to the standard and should be rejected until the dealer reduces them to the required fineness.

11. Official vegetable drugs should be classified or grouped according to the maximum amount of harmless impurities (accidental impurities) which may be permissible, as follows:

Group or Class A. Impurities not to exceed 5 percent.*[2] as ergot, kamala, lycopodium, some resins, gums, seeds, most fruits, ipecac, stem barks, some leaves, flowers, flowering tops, etc.

Group or Class B. Impurities not to exceed 10 percent.,*[3] as some roots, rhizomes, some leaves, most herbs, etc.

12. That official descriptions be prepared of the official vegetable drugs, based upon microscopical characters, as indicated in this report and that these descriptions be supplied to micro-analysts to serve as guides in the critical examination of powdered vegetable drugs and as a means of unifying methods and results.

13. Uniform blank report cards for microscopical and bacteriological work should be adopted and used.

Revised to July 20, 1912.

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*[2]Inclusive of inert material only as sand, pebbles, dirt, foreign vegetable matter, etc., not intentionally added.

*[3]It is probable that several exceptions must be allowed for this limit, as for example henbane and valerian, in which the impurities generally exceed 10%. However, in the great majority of drugs of this class the impurities need not exceed 10%, provided reasonable care is observed in collecting and garbling.

TINCTURE OF CANTHARIDES AND ITS ASSAY.

WILBUR L. SCOVILLE, DETROIT, MICH.

Two years ago I had the privilege of calling the attention of this Association to the onery character of cantharides and the deceitfulness of its tincture.

Further experiments on these bugs which are herein reported, again bear testimony to their bug-nature and irritating behavior and the "equally successful" results which are obtained when they are "extracted."

First let me remind you that the active principle of cantharides is cantharidin —a body of an anhydride character, and obstinate action—whose chief peculiarity, from a pharmaceutical standpoint, is its contrariness with solvents. Chloroform, acetone, benzol and acetic ether are its best solvents, but one is continually impressed with its indifference even to these. Chloroform dissolves it most readily, but while it is stated to be quite as soluble in acetone, yet it dissolves in this with exasperating slowness, and in acetic ether it is just as bad. Indeed, in any solvent which I have tried, satisfactory results are only obtained when the solvent is used warm, or the action is allowed to continue for prolonged periods.

A series of tinctures was made, representing 5 grams of drug in 100 cc. and with varying menstrua. All tinctures contained 5 cc. of glacial acetic acid in 1000 cc., which acid was used in the menstruum employed to moisten the drug, and was employed for the purpose of liberating the combined cantharidin in the drug. The drug contained 0.65 per cent. of cantharidin. Following are the results:

	Menstruum	Process	Strength	Per cent. of exhaustion
No. 1	Alcohol	Percolation	0.0092% 0.010%	30
No. 2	Acetone ..... 50 Alcohol 950	Percolation	0.012% 0.013%	38
No. 3	Chloroform ..... 50 Alcohol 950	Percolation	0.018%	54.5
No. 4	Acetone .....100 Alcohol 900	Percolation	0.014% 0.015%	45
No. 5	Chloroform .....100 Alcohol 900	Percolation	0.014% 0.016%	45
No. 6	Acetic ether.....125 Alcohol 875	Percolation	0.014% 0.016%	45

In all the above, maceration was continued 48 to 72 hours, then percolation was allowed to proceed very slowly, the final yield being obtained by pouring on alcohol. It will be noted that in the best tincture obtained the drug was but little more than half exhausted, and in this case the chloroform was all used in the preliminary maceration. But the tincture precipitated badly on standing, while No. 5, which was made with a mixed menstruum, remained clear.

No. 1 was made by first extracting the drug with petroleum ether to remove the

fatty matters, thinking that these might hinder the extraction with alcohol. The drug yielded 8.22 per cent. of fat and the fat showed a slight activity—producing a small blister on three of seven victim-volunteers after 12 hours' application, but no irritant effects in four hours in any of the seven.

Ten Per Cent. Tinctures. Nine of these were made and tested, as follows, all containing 0.5 per cent. of acetic acid by volume.

	Menstruum	Process	Strength	Per cent. of exhaustion
No. 1	Alcohol	Percolation	.016 .020	27.7
No. 2	Acetone ..... 50 Alcohol 950	Percolation	.022 .024	37.0
No. 3	Chloroform ..... 50 Alcohol 950	Percolation	.0165 .0175	26.1
No. 4	Acetone .....200 Alcohol 800	Percolation	.0175 .0190	27.1
No. 5	Chloroform .....200 Alcohol 800	Percolation	.0165 .0180	26.1
No. 6	Acetic ether.....250 Alcohol 750	Percolation	.029 .031	46.0
No. 7	Acetic ether.....250 Alcohol 750	Digestion at 40° C.	.043 .047	66.0
No. 8	Acetic ether.....250 Alcohol 750	Digestion at boiling	.045 .047	66.0
No. 9	Acetic ether.....400 Alcohol 600	Digestion at boiling	.045 .050	74.0

What can one conclude from figures like these? Apparently alcohol is just as good a menstruum as mixtures of alcohol and chloroform, or alcohol and acetone, in spite of the fact that acetone and chloroform are good solvents for cantharidin, while alcohol is not. Again, it is noticeable that a quarter to a third of the cantharides is exhausted by cold percolation.

The one fact which stands out clearly in the above is that digestion is of decided advantage in extracting cantharides with alcoholic menstrua, and it is also evident that a short digestion at 40° C. is as effective as long boiling, since No. 7 was digested at 40° for 6 hours, No. 8 was boiled 6 hours, and No. 9 was boiled 12 hours.

Furthermore, this line of tinctures does not equal those reported in 1910, in which a menstruum of 10 per cent. glacial acetic acid and 90 per cent. of alcohol was used and which showed an exhaustion of 90 per cent, 76 per cent. and 88 per cent. by cold percolation, on three different drugs.

Some experiments were made with cantharidin to learn if an alkaline extraction would be likely to prove effective. It was found that alcohol containing ammonia

will dissolve cantharidin very slowly in tincture strength, requiring four to six days for solution. Potassium hydroxide will not dissolve cantharidin in alcohol in tincture strength, the potassium cantharidinate being almost insoluble in the fluid. These results did not encourage an attempt at alkaline extraction and none was made.

Furthermore, an alkaline tincture would not produce the blistering effects of cantharides when applied externally, and so would not truly represent the drug.

The first of the above tinctures were made from fat-free cantharides, obtained as before by extracting the fat with petroleum ether and drying the mass. This process undoubtedly removes a small portion of the cantharidin, but the loss is probably very small. Still, since it does not aid extraction materially, and the tincture itself shows no advantages in color, clarity or appearance, the method offers no advantages.

The different tinctures show small variations in color, but all remain practically clear, or with slight precipitation after eight months. The difference in odor is less than one might anticipate, since the heavy odor of cantharides stands out plainly in all menstrua.

With regard to the assay of the tinctures, it was found that evaporation on sawdust at a temperature not exceeding 40° C., then treating the sawdust as a drug, gave very low and erratic results. This may be due to remaining traces of acetic acid, which will not evaporate readily, or to slow volatilization of the alcohol, which may carry off some of the cantharidin. As with most volatile bodies, there is a greater loss on evaporating a solvent slowly, than with rapid evaporation. In order to test the process of assay which was finally employed, an artificial tincture was made by dissolving 0.1875 gm. of pure cantharidin in 2.5 cc. of glacial acetic acid and 10 cc. of chloroform and making up to 500 cc. with alcohol; 200 cc. of this solution should contain 0.075 gm. of cantharidin. There was actually obtained in four trials 0.077, 0.076, 0.078 and 0.077 gm. of cantharidin. Whether the excess was due to errors in measurement (ordinary graduated volumetric flasks being used), or to an obstinate occlusion of chloroform by the crystals, was not determined.

The assay of cantharides and its tincture offers one peculiar difficulty which makes it troublesome. The cantharidin must be obtained in crystals sufficiently large to permit of washing to remove fatty matters without loss, and yet the crystallization must be sufficiently rapid to avoid serious loss. Unless exposure in a warm place is very prolonged, serious loss is not likely to occur, but the container should be removed from heat soon after the last portions of solvent have disappeared.

A number of attempts were made to titrate cantharidin, treating it as an anhydride which yields a bibasic acid on hydrolysis. Solutions in alcohol, acetone and benzol, were made alkaline with an excess of semi-normal alcoholic potassium hydroxide, digested at different temperatures for varying lengths of time, then titrated with decinormal acid, using phenolphthalein as indicator. The acetone solutions gave all sorts of results,—due probably to the fact that acetone itself combines with alkalies, and alcohol solutions gave low and uneven results. The

benzene solution seemed more promising in a few instances, giving results close to 100 per cent., but constancy could not be secured, and the results were as likely to be nearly 20 per cent. high or low as to be nearer the truth, so this plan was abandoned. Other chemists have failed in attempting to estimate cantharidin by titration, yet it seems probable that if the proper conditions and solvents can be secured, it may yet prove to be a practicable method of estimation.

But thus far the gravimetric method of assay is decidedly the most satisfactory and with practice quite concordant results are obtained. The process which was adopted after trying several methods is a modification of the Self and Greenish method, and is as follows:

100 cc. of 10 per cent. tincture is distilled rapidly to near dryness under reduced pressure, and the residue is rinsed into a 250 cc. Erlenmeyer flask with small portions of distilled water, aided by a few drops of ammonia, and using 40 cc. of water in all. Ten cc. of strong hydrochloric acid is then added, a couple of capillary tubes dropped into the flask to prevent excessive bumping, and the mixture is boiled under a reflux condenser for about 15 minutes. The flask is then removed from the heat, and the hot aqueous liquid is sucked out from under its layer of fat with a pipette, taking care to remove as little of the fat as possible; 25 cc. of distilled water and a few drops of hydrochloric acid is added to the residue, boiled under the reflux condenser about 10 minutes and the aqueous liquid removed as before and added to the first. This process is repeated twice more, using 25 cc. of water each time, and obtaining about 125 cc. of combined liquid. This is cooled and shaken out with 30, 30, 20, 20 and 20 cc. portions of chloroform, and the chloroform filtered.

The combined chloroform washings are evaporated rapidly to about 10 cc. then set aside in a moderately warm place for the remainder of the chloroform to evaporate spontaneously and the crystals of cantharidin to form. When the chloroform has entirely disappeared (usually on standing over night), add a little ether and evaporate off the ether, preferably quickly. To the residue add 5 cc. of a mixture of equal volume of absolute alcohol and petroleum ether, which has been saturated with cantharidin, and rotate the container occasionally until the crystals are loosened and the fatty matters are dissolved. Pour the liquid through a small pledget of cotton, retaining the crystals in the beaker, add 2-3 cc. more of alcohol—petroleum-ether solution and repeat until the crystals are free from fat. Then dissolve the crystals in 5 cc. of warm chloroform and filter the chloroform solution through the pledget of cotton, receiving the filtrate in a clean tared beaker or flask. Wash the first flask (or beaker) and cotton with successive small portions of chloroform, then evaporate the combined chloroform washings rapidly, removing the last traces of chloroform with a little ether, dry the crystals at 40° for 30 minutes and weigh.

Conclusions: The writer has not yet succeeded in making a tincture which fully represents the drug, by any method or menstruum tried. Ordinarily, the drug is from one-quarter to one-third exhausted by percolation. By digestion from half to three-quarters exhaustion is obtained.

The use of 10 per cent. glacial acetic acid and 90 per cent. of official alcohol

(both by volume) has thus far proved the most efficient menstruum—tinctures made with this representing 80 to 90 per cent. of the drug used. Such a menstruum is, however, very strongly acid.

LABORATORY OF PARKE DAVIS & CO., DETROIT, MICH.

DISCUSSION.

F. R. Eldred stated that in his experience the best way to dry the residue of cantharidin was in a vacuum desiccator, at room temperatures, as there was practically no loss when it was dried in this manner, and it was very easy to get rid of the solvent.

Charles Caspari, Jr., said he hoped that Mr. Scoville would continue his work with cantharides and the different solvents, and give the Association a table of his experiences. If, with the present methods, only one-third of the cantharidin was extracted by percolation, it showed the absolute necessity of some general, improved formula.

THE PHYSIOLOGICAL ACTIVITY OF CANNABIS SATIVA.

Comparison of Extracts from Indian and American-grown Drug Upon Human Subjects.

H. C. HAMILTON, A. W. LESCOHIER, R. A. PERKINS.

It has been claimed by various investigators that the common hemp (*Cannabis Sativa*) grown in the United States contains the same active constituent as is found in Cannabis Indica, the name of the official drug which is grown in India. Botanists do not distinguish between the two, the plant being identical wherever grown.

The fact that the Indian grown drug was used in all the early accounts of its intoxicating action may have led to the belief that the peculiar climate of India is accountable for the presence of an active constituent not normally present in the plant.

No recorded data have been advanced, however, to substantiate the claim that drug grown elsewhere does not contain such constituents. On the other hand Wood (Proc. Am. Phil. Soc., Vol. XI, p. 226), Houghton and Hamilton (Am. Journal of Pharmacy, Jan., 1908), True and Klug (Proc. A. Ph. A., (1909), True (Am. Journ. of Pharmacy, Jan., 1912), and Hamilton (Am. Jour. Pharmacy, March, 1912), have submitted the drug to careful pharmacological tests, and report that extracts from American grown drug are no less active than those obtained from India.

Dr. H. H. Rusby raised the question whether the test for activity on dogs can be accepted to prove its activity as a therapeutic agent.

Much of our knowledge of the action of drugs is obtained by observing their effects when administered to animals. The physiological action of almost every powerful drug is so characteristic as to be almost unmistakable to an experienced observer. Any one who has observed the characteristic effect of Cannabis Indica on susceptible dogs, symptoms which almost invariably appear in an hour after administering one to two grains of an active extract, and then has observed the same effect from an equal dose of an extract from the American drug, is inclined to accept it as proved that the two are identical.

The question raised by Rusby is, however, very pertinent and logically calls for proof of a different character. A series of experiments was therefore outlined which, it was hoped, would throw light on this much mooted question. To make a complete experiment it was decided that three persons would cooperate, each in turn , one taking the same quantity of each lot of drug, while two would remain normal to observe its effect.

There is not much of interest in observing the effect of the drug on others, since its action is more mental than physical. One's own description, if it could be recorded at the time, would mean much more than that of others. The subject, however, is not in a condition at the time to record these observations and if of a nervous disposition needs the presence of companions. Otherwise drowsiness is often the most characteristic effect of the drug.

The evening was taken for these experiments partly to give opportunity for sleep immediately afterwards and partly to have everything quiet with no disturbing affairs going on to distract attention.

One of the three (Hamilton) had on a previous occasion taken two grains of an active extract Cannabis Indica and was, to that extent, familiar with its action. On that occasion there were developed some disagreeable symptoms but nothing serious.

Nausea and vomiting occurred which were magnified by the imagination to an extent that was far from pleasant. Therefore, to duplicate conditions as nearly as possible the capsule containing 2 grains extract Cannabis Americana was taken at 5:30, followed by dinner at 6 o'clock.

EXPERIMENT I.

He relates his experience as follows:

About one hour after taking the drug a pleasurable sensation was experienced which can be described only as one of well-being and complete satisfaction. This was marred to an extent by the dread that the trip to the laboratory might not be entirely comfortable and that in the street car or on the street my behavior might be ridiculous without the cause being known. The walk to the car, the two-mile ride and several blocks' walk to the laboratory, seemed interminable, although no unpleasant feelings were experienced during the trip. One other fact was observed, namely, the difficulty in holding my mind on one subject long enough to express my thoughts.

About two hours after taking the drug, an uncomfortable feeling was experienced, followed shortly by nausea and vomiting. Several ideas impressed me strongly; I had a morbid fear that some one other than my associates would observe me, also that the effect of the drug on me would deter the others from taking it. I was opposed to doing anything and wished most earnestly for a comfortable seat or bed. A feeling of constriction and dryness in my mouth and throat was observed. Later a feeling of depression and drowsiness followed and I appeared to sleep. Whether I did or not is uncertain as I thought I remained conscious all the time. I knew that something in my condition was decidedly abnormal because of comments made by the observers, but I didn't know nor care what it was.

About four hours after taking the drug I felt much better and aroused entirely from my drowsy state. On the trip home I dozed off on several occasions but for only a few minutes each time. A comfortable night's sleep followed and no unpleasant after effects could be noticed.

The result of this experience convinced me that no difference could be detected in the action of extracts from Indian and American hemp, for, although in the former experiment there were several phases which did not appear in this one, the general effect was identical in each case. On the former occasion all the peculiar sensations were more vivid, time dragged more slowly, the nausea was greater, even suggesting the fear of death, the constriction in the throat was so great as to suggest choking to death, there was a greater willingness to give free rein to my imagination and to relate experiences and therefore greater difficulty in keeping the mind on one subject at a time. These differences were, however, in degree and not in kind and may be explained in part by my having become familiar with the drug and descriptions of its effect on others.

L's Observations on Subject H. Ex. I. About 6:30 H began to manifest a certain amount of uneasiness and difficulty in concentrating his thoughts. Coming from down town to the laboratory it was observed that he seemed to be more or less worried and to lose to a certain extent, sense of time, expressing the feeling that we had consumed an hour coming from down town, whereas the time for the trip was not more than ten or twelve minutes.

The laboratory was reached at 7:00 and H. expressed a strong desire to lie down or become ensconced in a comfortable chair. From 7:00 to 7:30 he appeared generally depressed and became irritated about seemingly trifling matters. At 7:40 pulse was taken and found to be 120, weak, irregular and easily compressible. Skin was cold and clammy and he expressed a belief that he was going to be nauseated. 7:50, pulse had dropped to 96, but was still weak and irregular.

8:00	Pulse 92,	Severe vomiting.
8:15	" 96,	Vomited.
8:30	" 88	
9:00	" 84	
9:30	" 86	
10:00	" 96	

The last record was taken after H. had been up walking around the room, which undoubtedly accounts for its increase over the one previously taken. It was observed throughout that when H. exercised, even to a slight extent, the heart action was markedly accelerated. In one instance the pulse rate was taken immediately after H. had been walking and was found to be 96. When taken less than a minute afterwards it was about 80, and was again increased to 96 by comparatively slight muscular movement. The pulse rate varied from 96 to 80 or 82 within a minute's time. Throughout it was soft and obliterated by slight pressure. During the whole evening his ideas seemed to be more or less confused, and it was apparently impossible for him to concentrate his thoughts on any particular subject. After beginning to make a remark, he would lose entirely his trend of thought, and be quite unable to complete it. At 10 p. m. the more marked effects of the drug had worn off.

P.'s Observations on Subject H. Exp. I. H. showed no symptoms whatever until about 6:30, when it became evident that he was worried and somewhat nervous. He said that the effect of the drug was coming on and expressed a desire to go to the laboratory as soon as possible. On the way he worried and fretted, at times fearing that he would be unable to walk and would make a spectacle of himself before reaching the laboratory. However, nothing of particular interest happened during the trip except an evident lapse of memory and evidence of nervousness. On arriving at the laboratory he expressed a desire for a comfortable chair or a bed and complained of feeling sick at his stomach. He was pale and his skin was cold and moist. Before long he vomited freely. This was repeated after a few minutes, but did not seem to relieve him greatly. He complained of a dryness in his throat and was continually wetting his lips. His pulse rate was almost alarming, varying greatly in rate from 84 to 120 within a minute, but for the most part being very fast and weak. His skin was cold and clammy and respiration somewhat shallow.

For over two hours he lay back in his chair in a sort of stupor, seeming to be asleep, but easily aroused. He had no disposition to attempt anything, not even to talk. During the early part of the evening he was evidently much worried, fearing that his condition would deter his colleagues from taking the drug. He also seemed to have a dread that some one other than those associated with him in the experiment would see him. He was asked to write, but firmly refused even to attempt it. When asked if he were having beautiful dreams and visions, his only reply was, "I wish I could tell you." He remained in this semi-conscious condition until about 10 o'clock when suddenly he aroused himself, said he felt all right and was ready to go home.

He dozed off momentarily twice on the car, and felt all right the next day except for a very faint headache.

EXPERIMENT II.

Personal Experience. A 2-grain dose of solid extract Cannabis Americana was taken upon an empty stomach. For fully two hours no symptoms of any kind were experienced. Then there was a peculiar unnatural sensation. This initial manifestation is difficult, in fact, impossible of description. No distress was evidenced nor was the feeling exceptionally pleasant. It was simply a recognition of the fact that I was not quite myself. Following this period there shortly developed a feeling of great elation, and a sense of well being. With no particular reason for being so, I felt inexpressibly happy. There was a twitching and drawing of the corners of my mouth and an uncontrollable desire to laugh, although I could not laugh aloud. Everything pleased me and I felt that my happiness was absolutely complete. The only tinge of regret that I experienced was that my colleagues were not having the same delightful experience. The more marked effects of the drug appeared to come in waves, although the general sense of elation was never lost. An occasional undulation would sweep over me and I would feel as though my body was swaying and there was an inclination to strike the table with my hands in an exuberance of delight. At times I had great trouble in coördinating my thoughts, although between the paroxysms which have been de-

scribed, my mind seemed reasonably clear. I felt that I was acting in an exceedingly foolish manner but had no power to control myself and in fact did not care to. As it grew late in the evening the stimulating effects of the drug decreased and I became somewhat irritable and touchy about trifling matters. At 10 o'clock the greater part of the effects had worn off, although I did not feel entirely normal. After a light lunch I retired and slept very soundly. No after effects of any kind were experienced on the following day.

H.'s Observations on Exp. II. L.'s experience was almost entirely one of enjoyment. There was no nausea and no evident discomfort, although he once remarked that the earlier effects were much the more pleasant. There was unquestionably the same well-being, expressed by his repeatedly saying, "I just feel so good." Hearty laughter for which there was no evident reason was explained in this way. At no time was there any desire to carry on conversation more than to answer any questions addressed to him. This would account for there being no noticeable difficulty in keeping his thoughts collected.

Later a sensation of drowsiness was evident and with it expressions of irritation when anything of a disturbing nature was said or done. The effect of the drug was long delayed in appearing, nothing being noticed either by himself or the others until nearly two hours after its administration. This probably explains why its effect was so persistent, intoxication being very evident fully six hours after the drug was taken.

P.'s Observations on Exp. II. No effect was noticed for about two hours when a slight twitching of the corners of the mouth was observed and a tendency to smile. When asked why he smiled he said he didn't know, just felt good but could not define the senation, it was simply one of enjoyment. He said that he felt sorry for us, as he was the only one enjoying himself. Presently he broke into a restrained, but hearty laugh. When questioned, he said it was simply because he couldn't help laughing. He admitted that he was making a fool of himself, but said he couldn't help it and didn't care anyway. At one time he pointed at an article of furniture in the room and had another laughing spell. When asked the reason he merely said that it was funny. He answered all questions put to him, but showed no tendency to be talkative, most of his answers being short.

These spells would last for probably a minute or two and then there would intervene a normal period of ten to twenty minutes. He said he was simply "happy" drunk, and he looked and acted that way. Later in the evening he showed a decided disposition to be annoyed by talking or answering questions and remarked that the earlier effects of the drug were much the more pleasant. At 10 o'clock the action of the drug had worn off sufficiently so that he felt inclined to go home. He was somewhat irritable on the walk from the laboratory and said afterwards that he was very drunk on the way home. He ate lunch before retiring and enjoyed a comfortable night's sleep and felt fine the next day, with no bad effects whatever. Observations were taken of the blood pressure (systolic) and of the pulse rate at intervals during the evening, but nothing abnormal was noticed. The pulse was full and steady and the rate averaged about 80, not varying more than six beats at any time. The blood pressure was 130 mm. of mercury throughout the evening.

EXPERIMENT III.

P. relates his own experience as follows: At 4:30 I took a capsule containing two grains S. E. Cannabis Americana on an empty stomach. About one hour later, while talking to my colleagues about the best time for them to go out for a lunch, they asked me if I didn't feel anything; I answered, "No," and truthfully I did not, but no sooner had I spoken than I experienced a peculiar sensation. The corners of my mouth commenced to draw and I could not refrain from laughing; I laughed so heartily that I was tired afterwards, although nothing seemed particularly amusing. This spell lasted for probably half a minute, although it seemed much longer to me.

Then my associates left me, and I was alone in the laboratory. At this time I felt most exhilarated. Everything seemed so enjoyable and I was extremely comfortable. I walked up and down the corridor, swinging lightly along, seeming to walk on air or feathers. My feet weighed nothing. It was no effort to walk; it was more like floating along. My sense of proportion was lost, my feet seemed miles away from me, my arms were long and big. The corridor was miles long; I walked or rather floated up and down apparently for hours, waving my hands and arms, marking time to imaginary music. All this while I was smiling and enjoying myself immensely. All my faculties were not impaired, however, because to test myself I read part of a typewritten notice on the bulletin board. I was standing there when a person who knew nothing of the experiment passed by. We greeted each other and evidently he noticed nothing peculiar in my appearance nor actions. I was surprised at this, for it seemed to me that he must see how silly I looked and how I swayed when I walked, but especially he should have noticed my voice, which sounded to me like the deepest bass. It seemed to me to be musical and full toned and I liked to hear myself talk. My colleagues, however, did not appear to notice it nor did they appreciate that I felt so good toward them and myself.

After what seemed hours of walking I sat down to await their return from lunch. Several waves swept over me during this time and also later on, which are very difficult to describe adequately. The feeling was one of well being and perfect satisfaction beginning with a sort of numbness or fullness in the extremities, a feeling of unreality in the surroundings. I knew that my hands were normal in appearance, but when not observing them, they seemed to be detached and not a part of me. We played a game of cards and in playing a card I seemed to be throwing some enormous but very light article over a great distance. These spells usually started by smiling and ended in laughing rather hysterically, pounding the table with my fist. But I could not laugh aloud because of the peculiar drawing and constriction about my face and neck previously noted. As the effect began to wear off these paroxysms became less frequent but no less irresistible. I felt no unpleasant symptoms at any time. About 10 o'clock I was hungry and ate some sandwiches with great relish before going home. I reached home without any difficulty, not feeling drowsy and without any change in my feeling of enjoyment. Upon arriving home I retired immediately because I felt that I was not entirely normal. Before going to sleep, however, I experienced another wave.

I awoke early the next morning very much refreshed and none the worse for my experience.

H.'s Observations on Exp. III. The experience of P. was practically a duplicate of L.'s. The effect appeared one hour after taking the drug and except for an occasional lapse, his normal condition was regained five hours afterwards. There was more uncontrollable laughter in his case, no irritability and no apparent discomfort at any time. He seemed to give himself up more completely to the enjoyment of his sensations than the others. At times he seemed to be addressing an imaginary audience, pacing back and forth, gesturing and appearing to talk to himself.

We were inclined to question whether some of his actions were not assumed and voluntary; but he assured us that he was acting just as he felt.

L.'s Observations on Exp. III. P. began to feel the effect about an hour after the administration of the drug. He seemed to be possessed of a desire to move about, paced up and down the corridors, declaring he felt as though he weighed not more than fifteen pounds. He was apparently very much pleased with himself, and bubbling over with happiness. At times he would be seized by fits of uncontrollable laughter, which in some cases was spontaneous and without apparent cause, but usually it was incited by the others laughing at or with him. Between these paroxysms of laughter P.'s condition was practically normal, he could talk rationally, and his mind, as far as indications could be depended upon, was clear. At no time did there seem to be a loss of coördination. It was observed that the action of the drug was apparently produced in waves, while between these seizures one's condition would be practically normal.

During the three experiments recorded above the one under observation felt a certain restraint, knowing that the others were watching for every abnormal action. For this reason it was decided to vary the conditions in the further experiment and have all three under the influence of the drug at the same time. It was hoped in this way to eliminate the restraint evident in each of the individual experiments and perhaps observe some new features in the action of the drug.

EXPERIMENT IV.

In this experiment H. took Extract of Cannabis Americana again, while L. and P. took extract Cannabis Indica. This gave an opportunity for L. and P. to compare the effect of the two varieties, both on themselves and on the others, while H. took this opportunity to repeat the experiment with all the conditions the same, except that he ate no dinner until the effect was practically gone. All three took the drug at 4:30 on empty stomachs, the dose in each case being two grains.

This last experiment, while not developing any new features, was in other respects successful. H. had no unpleasant experience and the evening was one of unalloyed pleasure, proving that all the discomfort was directly traceable to the nausea from having food in the stomach. L. considered the effect to be much less intense and of shorter duration in this experiment than that from the American drug, while P. took the opposite view in his case.

H.'s account of the experiment is as follows: L. was the first to note the characteristic effect of the drug while P. and I remained unaffected for fully two hours after it was taken.

The same feeling of well-being and complete satisfaction was experienced by all, this being as evident to the observers as to the subject himself. Uncontrollable laughter was more frequent and longer continued than in the individual cases, probably because during a cannabis intoxication so little is necessary to excite it on, and when one started the others joined in the hilarity. No one felt inclined toward any activity, but only to give himself complete relaxation. Each of the three was emphatic in stating that he knew when he was making himself more or less ridiculous, but could not control the impulse nor did he wish to restrain himself.

About six hours after taking the drug, at the end of a quiet card game, without any comment, each of the three assumed as comfortable a position as possible and fell into a doze. It was apparently not sleep in any case, as each was fully conscious of noises in the building and annoyed by them.

This lasted not more than ten minutes, at the end of which we all felt fully aroused and ready for something to eat. This ended the experiment as outlined in advance. The only variation from the original plan was, as noted, for all three to experience the effects at the same time. No point was lost because of this, since the subject is at all times acutely conscious of everything occurring.

L.'s Account of Experiment IV. My personal experience with Indian Cannabis was very much the same as those already narrated as occurring with the Cannabis Americana, although the effects were developed somewhat more promptly, and were not quite so pronounced or lasting. P's feeling seemed also to duplicate very closely those which he had had from the Cannabis Americana, but contrary to my own were somewhat more pronounced. He did not have any of the nausea or any of the other uncomfortable features which occurred during the first experiment, indicating very clearly that these symptoms were due to the hearty dinner which he had eaten, and were not to be construed as characteristic of Cannabis. The drug in this last experiment was taken at half past four, and the greater part of the effects were felt from about half past six to eight o'clock. After that time the more exhilarating action had worn off, and I experienced only a drowsiness. For a half or three quarters of an hour after I had ceased to feel any more marked effects of the drug H. and P. continued to be very much exhilarated. About 9 o'clock all three of us became drowsy, and as if by mutual consent laid our heads on the table in a sort of doze, although none of us really went to sleep. This condition continued about ten to fifteen minutes after which we felt much refreshed.

P.'s Account of Experiment IV. L. was the first one to show any symptoms from the effect of the drug. He had practically the same experience as on the previous occasion. H. and I did not feel any effect for fully an hour later than L., but finally went under the full influence of the drug very suddenly, there being no premonitory symptoms whatever. At times one of the three would have a paroxysm of laughter alone, but usually one would start laughing and the others join him at once. It was observed, however, that L. was getting over his intoxication early and he sat there seemingly rather bored and provoked at the others for being so happy. The

effect on myself was apparently more intense than that of the previous test, and more so than was experienced by the others, laughing spells being more frequent and inclined to be hysterical. No unpleasant symptoms were experienced by any one of the three during the evening. After several hours playing cards and talking a peculiar thing happened. Suddenly and without a word from any one we stopped the game, lay back in our chairs and dozed. It seems to me that I slept for a long time although it was in reality only about ten minutes. It probably was not really sleep as I remember hearing the watchman on his rounds and I wondered whether he would come into the room where we were. As suddenly and spontaneously as we had dozed, we aroused and, having practically recovered from the effects of the drug, prepared to go home.

In conclusion it may be stated with certainty that the physical and mental condition of the human subject at the time of administering this drug influences its effects both in degree and kind. For that reason no two persons can be expected to exhibit the same symptoms as a result of ingesting equal quantities of the same drug, and no person can be depended upon to react in exactly the same manner from the same drug on different occasions. With these facts in mind the differences in the three personal experiences above related are readily explainable and there is no reasonable ground for doubting that Cannabis Sativa grown in India and America contains the same active constituent.

The method for assaying extracts of Cannabis Sativa described in detail by Houghton and Hamilton (Am. Journ. of Pharm., Jan., 1908) makes use of dogs for exhibiting the characteristic effect of the drug. Attention is called in this article to the fact that the animals must have been specially selected for the purpose. They must not only be susceptible to the drug but their behavior under its influence must have been determined by preliminary observation. We may thus avoid errors due to their individual idiosyncrasies. There are, apparently, no such marked differences in the character of the reaction in dogs as are observed in human subjects nor are they so variable at different times if they have been carefully selected as described above.

When proper precautions are observed the activity of an extract Cannabis Sativa relative to a standard extract may be determined with reasonable accuracy. My personal experience of twelve years in observing tests of Cannabis Sativa obtained from different countries, Africa, India, Germany, Greece and various localities in North America has convinced me that they all contain the same active constituent.

SOME COMMERCIAL SAMPLES OF DRUGS.

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The purpose of this paper is to report the results of a series of determinations which were made with the object of ascertaining, as far as possible, the purity and quality of certain drugs, especially some of the gum-resins, as furnished to the trade by the wholesalers of the middle west. The samples were obtained

from five different dealers, located in Chicago and Indianapolis. In some cases determinations were also made of samples taken from our stock of drugs used in teaching materia medica, most of these having come from an eastern importer who makes something of a specialty of supplying drugs to be used as materia medica samples.

By examination of different price-lists it was learned that considerable diversity prevails in the manner of denoting the different qualities of these drugs. In ordering the drugs, most of which were obtained through retail pharmacists, they were ordered first as "powdered," second as "whole goods," and third as "best select." Most of the houses furnished powdered and whole samples of each drug ordered, but only one firm sent more than one quality of the unground drugs.

The samples weighed for determination were all of the air-dried drugs. The determinations for percentage of alcohol solubility were made by extracting to completion in a Soxhlet extractor, the comminuted drug having been mixed with washed sand to facilitate extraction. In ash determinations the samples were burned to a white ash of constant weight without using any oxidizing material.

Asafoetida.—I will show first my results with ten samples of asafoetida, a drug very much under discussion of late because of the highly adulterated condition in which it is commonly found. As you are well aware, the U. S. P. VIII specifies that asafoetida shall yield not less than fifty percent of alcohol soluble matter, and not more than fifteen percent. of ash, the ash limit having been raised from ten to fifteen percent. after the first edition of the eighth revision appeared. The tabulated results follow:

Number of Sample.	State of Comminution.	Percentage Alcohol Soluble.	Percentage of Ash.	Remarks.
1	Whole	52.65	25.76	
2	Powdered	38.54	36.49	
3	Whole	33.61	43.54	—Contained gypsum coated with asafoetida
4	Powdered	42.07	41.03	
5	Whole	62.87	12.85	
6	Powdered	3.75	88.82	—Said to contain 50 percent. dryer
7	Whole	48.7	15.3	—Contained glycerin
8	Whole	59.76	6.54	—Labeled "Optimus"
9	Powdered	60.76	13.66	
10	Whole	44.98	23.70	

We have been led to believe by some of the published reports that no asafoetida was being offered which would comply with the pharmacopoeial requirements. It will be noted, however that three out of the ten samples examined do comply in both particulars, and strange to say, one of these is of the powdered drug, which is undoubtedly especially prone to adulteration. Sample No. 7, contained a large amount of glycerin which of course would make the results valueless for purposes of comparison. Sample No. 8 which makes an excellent showing was labeled "Optimus" indicating that one firm at least is prepared to furnish a high-grade article when the best is specified on an order. Sample No. 6 should be carefully noted. This sample was not under the label of the house from which it was purchased, but bore the label of a prominent firm of drug millers. It was labeled "Powdered Asafoetida Compound, 12% soluble gum mixed with 50% dryer. "The percentage of ash was not stated on the label. The sample evidently consisted almost entirely of clay. Sample No. 3 was

largely adulterated with lumps of gypsum which were thinly coated with asafoetida. Most of the samples of whole drug showed white lumps of mineral matter, much of which I think was gypsum, although some gave a test for carbonates.

One house stated on the labels of both samples furnished percentages of ash and of alcohol soluble matter, another stated only percentages of alcohol soluble matter. In most cases the percentages stated were only very slightly different from the results obtained by us. In this respect No. 6 was a notable exception.

I think we may learn from these results that there is asafoetida on the market both whole and powdered which conforms to U. S. P. requirements, although there is evidently much more that does not. It is apparently true that it is not absolutely essential to heavily load asafoetida with inert material in order to powder it, although it probably is necessary to drive off the volatile oil, thereby greatly impairing its value.

Ammoniac.—I present results obtained from four samples of ammoniac. All of these are of the whole drug, none of the houses furnishing the powdered article. Ammoniac is, of course, not at present official in the United States. It may be of interest to note that the German Pharmacopoeia places limit of ash at 7.5%, and the alcohol insoluble matter at 40%. The French Codex has the same limit for alcohol insoluble matter but places ash limit at 5%.

No. of Sample.	State of Comminution.	Alcohol Insoluble.	Percentage of Ash.
1	Whole	27.83	2.20
2	Whole	34.74	—
3	Whole	28.36	3.1
4	Whole	29.42	5.82

All samples showed admixtures of seed and portions of stems, but gave little evidence of mineral adulterants.

Myrrh.—Twelve samples of myrrh were examined. Our Pharmacopoeia makes no statements in regard to ash, or alcohol solubility of myrrh, but gives a qualitative test intended to indicate presence or absence of bdellium. The P. G. places ash limit at seven percent., alcohol insoluble not higher than 65%.

No. of Sample.	State of Comminution.	Percentage Alcohol Insoluble	Percentage of Ash.	Remarks.
1	Whole	62.83	6.3	—Materia Medica Stock
2	Powdered	77.52	18.3	
3	Whole	72.07	5.87	
4	Powdered	78.41	11.36	
5	Whole	75.18	7.31	
6	Powdered	75.67	14.59	
7	Whole	75.9	8.88	
8	Powdered	74.62	11.29	
9	Whole	70.90	12.66	
10	Whole	69.30	7.22	—Labeled "Optimus"
11	Powdered	72.04	11.09	
12	Whole	73.39	5.11	

Only sample No. 1 is in conformity with the requirements of the P. G., and this was a sample taken from our materia medica stock and I think had been on hand for some years.

All of the samples failed to indicate presence of bdellium on application of the nitric acid test of the U. S. P. Also all samples failed to give indications of East India or Bisabul myrrh when the bromine test of some of the pharmacopoeias was applied.

Gamboge.—Nine samples of gamboge were examined, five in pipe and four in powder. Our Pharmacopoeia specifies not over three percent. of ash, not more than 25% of alcohol insoluble matter. Both German and French Pharmacopoeias place the ash limit at 1%.

No. of Sample.	State of Comminution.	Percentage Alcohol Insoluble.	Percentage of Ash.
1	Pipe	21.66	2.5
2	Powdered	12.23	2.48
3	Powdered	24.93	2.44
4	Pipe	27.34	2.37
5	Powdered	28.81	2.52
6	Pipe	21.79	2.49
7	Powdered	47.85	2.91
8	Pipe	24.64	1.80
9	Powdered	16.46	2.39

Six of the nine samples complied with both requirements and two of the others exceeded the limit for alcohol insoluble material only slightly. Sample No. 7 was found to be adulterated with starch or some starchy material.

The remainder of the drugs reported upon are not gum-resins, but were included in the investigation.

Guaiac.—The U. S. P. VIII requires that guaiac shall yield not more than 4% of ash, and not more than 15% of alcohol insoluble matter. The acid number, it says, shall be between 70 and 80. The Codex says that guaiac shall be soluble in 90% alcohol.

No. of Sample.	State of Comminution.	Percentage Alcohol Insoluble.	Percentage of Ash.	Remarks.
1	Powdered	20.08	4.54	
2	Whole	28.79	3.36	
3	Powdered	24.14	4.75	
4	Whole	4.84	0.77	
5	Powdered	20.61	5.33	
6	Whole	31.90	4.17	
7	Powdered	1.17	0.264	
8	Whole	0.624	0.215	—Soft and Plastic.
9	Whole	4.67	1.36	

Four samples out of the nine examined were in conformity with requirements as far as ash and alcohol solubility are concerned. I will call your attention to the very low percentage of ash and also of alcohol insoluble matter in sample No. 8. This sample was in soft plastic cakes very different indeed from the hard brittle resin usually met with. Sample No. 7, a powdered article from the same firm which furnished No. 8 also gives good results. In regard to the acid number for guaiac, I will say that I did not find it possible to obtain accurate results on account of the difficulty in securing a sharp end point. I did not regard my results in this determination as worth reporting, and I note that several other investigators make similar statements in regard to the acid number.

Benzoin.—The U. S. P. VIII places the ash limit for benzoin at 2%, and states that it should be almost wholly soluble in warm alcohol. The Codex has the same requirements. The P. G. has the same ash limit, but is more specific in regard to alcohol solubility, stating that the alcohol insoluble matter should not exceed 5%. The Codex states plainly that only Siam benzoin is official, while the P. G. provides a test for cinnamic acid excluding samples which contain it.

This means that all except Siam benzoin is excluded, since most authorities agree that Siam benzoin does not yield cinnamic acid while other varieties do.

The results obtained with twelve samples are tabulated.

No. of Sample.	State of Comminution.	Percentage Alcohol Insoluble.	Percentage of Ash.	Remarks.
1	Whole	0.878	0.203	—Siam benzoin from stock.
2	Whole	10.66	0.906	
3	Powdered	.....	....	This sample was ginger.
4	Whole	21.247	1.16	
5	Powdered	19.278	1.226	
6	Whole	31.689	1.33	
7	Powdered	10.689	1.60	
8	Whole	23.414	1.204	
9	Powdered	32.869	1.92	
10	Whole	29.57	1.17	—Contained tears of sandarac.
11	Whole	26.72	1.14	—Labeled "Optimus."
12	Whole	23.73	1.29	

It will be observed that while all samples were within the limit for ash, only one might be said to be "almost wholly soluble in alcohol," as the U. S. P. states the requirement. Sample No. 1, which yielded less than 1% of alcohol insoluble material, was a sample of Siam benzoin from our materia medica samples. It was a fine sample, of distinctly "almondy" type. Sample No. 3 though purchased under the label "Powdered Benzoin," was nothing more nor less than powdered ginger. Siam benzoin is evidently not commonly found on the market in the middle west, since it was ordered from all the houses from which drugs were obtained but not one supplied it. I find that it is quoted in few drug price lists published west of New York.

I think the Pharmacopoeia should make a more exact statement in regard to alcohol solubility. It would appear that unless we wish to exclude all varieties but Siam, it will be necessary to make the allowance for alcohol insoluble matter rather liberal. All samples of unground Sumatra benzoin examined showed large content of bark and woody material. It may be that this admixture is unavoidable under conditions in which it is collected. The information on manner of collection of Sumatra benzoin seems to be very limited.

Lycopodium.—Although there is no good reason why a report on lycopodium should appear in a paper which is concerned principally with gum-resins and resins, I will give results on several samples examined. Sample No. 1 was from stock, the others came each from a different wholesale dealer. You will recall that the U. S. P. VIII places the ash limit at 5%. The P. G. is a little more stringent, allowing only 3%.

No. of Sample.	Percentage of Ash.	No. of Sample.	Percentage of Ash.
1	1.41	4	1.89
2	1.57	5	1.81
3	1.79	6	1.49

All samples yielded a percentage of ash not only below five but below two percent.

None of the samples when examined under the microscope showed any evidence of adulteration, except in one case in which a mere trace of foreign substance was detected. All gave negative results when the iodine test for starch was applied.

I note that some reports refer to frequent adulterations but the above results would indicate that the market offers a perfectly pure article. It would seem that the ash limit might well be placed somewhat lower than 5%.

In conclusion I will state that I think that ash standards might well be established for a number of other drugs than those for which they are at present stated. I would suggest however that if ash determinations are to become of increasing importance, that a method of procedure be outlined in the introductory notices of the next revision.—*Valparaiso University, Department of Pharmacy.*

REPEATING PRESCRIPTIONS.

British physicians and pharmacists are trying to get together in closer relations to the mutual advantage of both callings. Dispensing physicians and counter prescribing pharmacists have caused as much trouble in that country as they have in the United States. One pharmacist stated when discussing the matter that he had just filled a prescription which, as near as he could judge, had been filled 135 times, the prescriber receiving a single fee for writing it. It seems that the English law says that the prescription belongs to the patient who pays the fee, but the doctor who writes it has the power to designate the number of times it may be filled. The Pharmaceutical Journal suggests printing on the prescription something like the following:

This prescription is given upon the understanding that it is for present indications only, and that it is not to be repeated more times than I order.

Of course, the physician should state the number of times he will permit the prescription to be filled, then sign his name and date the order.

While our British cousins are coming to an understanding it will be well for the pharmacists of this country to see if they cannot make better progress in the near future than has been accomplished in the past.—*Meyer Bros. Druggist.*

LEADERS IN THE MAKING.

If you want to be something more than the average worker, you must do something more than average work. If you expect to become an important figure in the world of commerce, a captain of industry, instead of a common soldier in the ranks of labor, you must put your shoulder to the wheel and push, and push hard.

It is astonishing how many young men are trying to get a living without hard work. It does not seem possible that so many people could live off one another without really producing anything themselves. Everywhere we see young men looking for easy places, short hours, and the least possible work for the greatest possible salary.

Even if it were possible to get a living with a very little effort, you could not afford it. You could not afford to coin your brain into dollars, to make dollar-chasing the ambition of your life. There ought to be something larger in you than that. There is something in you that will not be satisfied that will protest against selling yourself so cheaply. You can not respect yourself unless you are doing your best, making your greatest effort to bring out the best thing in you.—*Orison Swett Marden.*

Section on Pharmacopoeias and Formularies

Papers Presented at the Sixtieth Annual Convention

REPORT OF THE CHAIRMAN OF THE A. PH. A. COMMITTEE ON THE UNITED STATES PHARMACOPŒIA.

L. D. HAVENHILL, LAWRENCE, KANSAS.

In the absence of a report from the committee as a whole the Chairman submits the report as an expression of his individual views.

The work of this committee as defined in chapter X, Article X of the by-laws of this Association is three-fold. In the past this committee has confined its efforts largely to the noting of errors of any kind found in the U. S. P. and to suggesting improvements in processes, etc. The committee this year finds itself embarassed along these lines by the lack of available material on which to work, since it is obvious that further criticism of the U. S. P. VIII is useless and that suggestions relating to the U. S. P. IX are presumptuous.

Your chairman, recognizing that the members of his committee were also members of such important committees as the Committee on the Revision of the U. S. P., the Committee on the National Formulary, and the Committee on Unofficial Standards, and realizing that these important activities are absorbing all of their available time and energy, has not outlined any specific line of work during the year.

This committee as a whole has in the past made but little effort to exercise its function of collecting statistics regarding the frequency with which official and non-official remedies are used in medicine. This has been due largely, we believe, to the difficulty in securing reliable data and to the fact that generally speaking statistics are dry and uninteresting. If this committee is to serve the Association along this line, the chairman feels that the appropriation of a small sum to defray clerical expenses will be necessary. The third and last function of this committee is to endeavor to ascertain the general wishes and requirements of the profession throughout the country in regard to any desired changes in the Pharmacopœia.

The chairman has felt for some time that something should be done to promote a more favorable attitude toward the Pharmacopœia among physicians. This feeling has become so strong as to amount to a conviction and it is this part of the committee's work that has engaged his attention during the past year. As might be expected, there is a sort of general apathy in pharmacopœial matters at this time. Some of the men who have felt very strongly have already expressed themselves and are content to await the result before launching forth anew, while others in the absence of any definite information concerning the

progress of the U. S. P. IX believe that it is useless to anticipate the demands of the U. S. P. X.

As the result of considerable conversation, observation, and correspondence, your chairman is convinced that the U. S. P. does not measure up to the expectations or desires of the various interests centered in it. This is unfortunate and must in some way be remedied. As one practicing physician puts it, "The doctors don't know much about the book." A canvass of physicians' libraries will, I believe, bear out the truthfulness of his assertion. Relatively few of them possess a copy of the U. S. P. Why is this? The answer is obvious, the book does not contain sufficient material that is vital to his successful practice and so he is learning to do without it. That the physicians are not indifferent to the importance of a pharmacopœia is evident from such assertions as the following, coming from leading men in the profession. One physician writes to the effect that "Owing to the press of other work I must decline your kind invitation to contribute a paper. However, I do not think that you are missing anything, for all my suggestions do not seem to have had any visible effect." Another writes, "So much has been written by the medical profession regarding its ideas of pharmacopœial revision that I do not feel that anything more need be said. I for one do not feel like making any further effort to present to the pharmaceutical profession the wishes or ideas of the medical profession." Another writes to the effect that he would be glad to see an A. Ph. A. section on the U. S. P. and N. F. established where physicians and pharmacists could meet on common ground, where pharmacists could discuss things of interest to physicians and where physicians could discuss things of interest to pharmacists. This assertion but confirms the contention of Professor Oldberg for a sixth section in the A. Ph. A.

Since the U. S. P. and N. F. have been made legal standards, those who are intrusted with the enforcement of the Food and Drugs Law frequently find that these standard works are inadequate for their purposes, and they are desirous of revision along lines suitable for law enforcement. Pharmacists also apparently find the U. S. P. and N. F. insufficient for their needs and frequently substitute for one or both a dispensatory or some other more elaborate formulary. The result of this must necessarily be a state of growing dissatisfaction. At the present time there are several standing committees whose aims are to improve the standards of the U. S. P. It is true that these committees were not formed at the request of the U. S. P. C. Committee of Revision, but their work is not without value, and it is the growing belief that these various committees should be brought into closer harmony, and that to make their work more effective these committees as such should be officially recognized by the U. S. P. C. Committee of Revision. In this way much of the work of revision might be accomplished in advance and at a saving of considerable energy which is now apparently lost in duplication.

The original intent of the Pharmacopœia was to secure for the physicians uniformity in drugs and medicines. This primary idea in many cases seems to have been overlooked at the expense of the pharmacist and the annoyance of the physician.

Your chairman is convinced that in order to harmonize these various interests an entire reorganization and adjustment is necessary. The Pharmacopœia should

be published in three volumes. Two volumes should be of primary interest to pharmacists; one of these should be essentially a book of simples. It should comprehend all drugs and simple preparations that are used by physicians of what-so-ever school, giving appropriate titles, descriptions, and tests for same. Deletions should be unnecessary, but admissions should be made as rapidly as demanded by physicians. The other volume should be a formulary pure and simple. It should contain standard formulas for such medicines as are demanded by physicians in their regular practice, such medicinal preparations to be made from the standard samples. The third volume should be the physician's handbook and contain only such matters as are of interest to physicians in their practice. The editing and revising of this book should be intrusted to the best physicians, foremost pharmacologists, and therapeutic experts of the country. The information contained in this volume would have the stamp of authority in all medical schools. It would thus be possible to place in the hands of physicians the latest information concerning drugs, without in the least depriving the older members of the profession of their favorite drugs simply because modern experimentation had failed to show that they were physiologically active.

Necessary additions should be made annually by supplement and complete revision made, say every ten years. In this way the pharmacists would exercise only their legitimate function—that of placing the stamp of approval not upon the drugs and preparations but only upon the methods of selecting, testing and preparing them. Those entrusted with the enforcement of the sections of the Food and Drugs Law would thus be provided with sufficiently comprehensive standards.

By so doing, it is believed that physicians can advance the science of thereapeutics as rapidly as they desire without seriously disturbing their less progressive brothers, while pharmacists can also progress without requiring the busy physician to revise his materia medica every ten years. In this way it is believed that these great interdependent interests may be satisfactorily served and brought into harmony.

GETTING READY FOR THE 1920 PHARMACOPOEIA.

WM. MITTELBACH, PH. G., BOONVILLE, MO.

The Committee on Pharmacopoeia of the American Pharmaceutical Association being a continuous body, might well take in hand matters pertaining to the 1920 Revision. Sub-committees from this Committee could begin at once the standardization of potent drugs; working out simple and reliable tests of identity and the detection of impurities and adulterants; testing working formulas for the galenicals; ascertaining to what extent the various drugs, chemicals and preparations of the Pharmacopoeia are used, and gathering general information, that will be useful and of value to the Committee having in charge the revision of that period. This will enable the Committee to get the Pharmacopoeia into the hands

of the physician and pharmacist more nearly on time, than has happened in the past, and is happening now. These is no good reason in completing the Pharmacopoeia 2, 3 or 4 years after the time the Committee is selected. Under present methods I fully realize that it is impossible to have the work ready for the printer under 3 or 4 years. Getting ready before time will obviate this delay, and we will have our guide book at the time we should have it. 1920 will mean 1920, and not 1925.

This is not criticism of the present committee; but only suggests a way out of the difficulty.

The information gathered in this way by the American Pharmaceutical Association, will, at once, be available to the Committee of 1920. State Associations can also pursue a like course. All these data, together with the contents of the digest being issued by the U. S. Public Health and Marine Hospital Service, will furnish material enough, and of the most reliable kind, from which a world's work can be made, and of which the pharmacists of our country will be proud. Our Association can, through its Committee, get in touch with like committees of other countries that will eventually result in a World or International Pharmacopoeia, and the simplification of pharmacy and therapeutics in general.

A PECULIAR CASE OF COMMON SALT POISONING.

O. H. CAMPBELL, M. D., ST. LOUIS.

The patient, R. G., was a healthy boy of 5 years. Parents were living and well. Patient had had mumps at 4 years and measles at 3 years; no other illness This summer he had not slept well and the mother believed that the child might have worms. On the advice of a friend the mother decided to administer a salt enema. The suggestion had been to use one tablespoonful in a quart of water, but she misunderstood and used one pound of salt in a quart of water.

The enema was given at 5 p. m., July 13. In from five to ten minutes the child cried, with severe pains in head, became intensely thirsty, vomited violently, and soon began to purge violently; within thirty minutes he became unconscious and had one convulsion after another. I saw him at 6:30 p. m. and found him unconscious and unable to swallow, with one clonic spasm quickly following another. The temperature was 99.2, pulse 150, bowels moving often, passing blood and mucus. At 8 p. m. the temperature was 102.5, pulse 170; the eyes were crossed, and all of the symptoms seemed worse. At 9 p. m. the temperature was 104.6, pulse about 200. All of the symptoms seemed worse and continued to increase in severity until 10 p. m., when the child died. I was unable to have a post-mortem examination. I have searched the literature carefully but can find no parallel case.—*Journ. A. M. A., Oct.* 5, 1912.

Section on Education and Legislation

Papers Presented at the Sixtieth Annual Convention

THE PROPOSED FEDERAL ANTI-NARCOTIC LAW.

FRANK H. FREERICKS, PH. G., LL. B., CINCINNATI, OHIO.

After several years of consideration and discussion of the proposed legislation to curb the evil of habit-forming drugs in interstate commerce, we have now presented to us in H. R. Bill 25834 by Mr. Harrison of New York, what evidently purports to be the last word on the part of those who have been particularly active in the interest of such legislation.

Concluding, no doubt, that under the commerce clause of the Federal Constitution it would not be possible to secure and have sufficient control over the traffic in narcotics, it was found necessary to take refuge in the taxing power of the Federal Government, which is along the line of the original Foster Bill, and in disregard of the Mann Bill, as relating to this subject. It certainly must be agreed that the chances for sufficient and constitutional control are certain under the taxing power, whereas this sufficiency may be seriously doubted under the commerce clause. It necessarily follows, that those who are sincere in desiring a sufficient control of the narcotic evil, should not object to the imposition of a small tax, for the purpose of bringing this about, and the writer believes, that pharmacists and retail druggists very generally have evidenced their sincerity in desiring a sufficient control of the narcotic evil, in fact we may claim, that from the ranks of pharmacists have come the first demands for such proper regulation, and through their activity and advocacy the movement has grown, so as now to be about consummated into some proper and efficient legislation.

Since such legislation is likely to be of great concern to pharmacists, and may possibly be so framed as to place upon them a great unnecessary burden, and because they are best prepared to properly decide upon the real practical scope of such legislation, it can hardly be denied, that they should have the largest voice in framing it, and nothing should be enacted into law which does not have the full approval of those who are the pioneers in this movement.

Now an analysis of the Harrison Bill discloses an aim:

1st. To properly regulate under the taxing power, and this is intended to apply to all who in any way traffic in the named narcotics.

2d. To secure a sufficient regulation and supervision by a system of record keeping and making of returns as the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury, may prescribe.

3d. To assure faithful compliance with these regulations by requiring each

and every trafficker to give bond, also, as prescribed by the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury.

4th. To make it unlawful for any person to send or receive in interstate commerce any of the named narcotics unless registered, as provided by the bill.

5th. To place the burden of proving rightful and legal possession of narcotics upon the defendant in any action.

6th. Finally as evidenced by subsequent change in the original Harrison Bill its far reaching and sweeping effect is sought to be relieved by excluding from the operation of the intended law the *sale* or *distribution* only of preparations which do not contain more than two grains of opium, one-fourth grain of morphine, and one-fourth grain of heroin, or a grain of codeine to the fluid or avoirdupois ounce, as also Dover's powder, and all liniments or ointments, prepared for external use only.

While the bill contains other provisions, the foregoing ones are those which will effect directly the retail druggist, and therefore should find his careful thought and study. With reference to them it may be said:

1st. As already stated, if an exercise of the Federal taxing power is most likely to provide an efficient and constitutional control, then the retail druggist should not object to the exercise of such taxing power and to the requirement for paying a nominal tax.

2d. The requirements for record keeping and for the making of returns as applied to the retail druggists are far-reaching in effect. It is difficult to believe that one acquainted with the practical every day operation of an average drug store, would make such provision. Since the exception with reference to preparations containing small quantities refers only to *their sale and distribution,* and since the keeping of records which may be prescribed by the Commissioner of Internal Revenue, is without limit, we may assume, that such regulations will be made to include the keeping of a record, not only, of the purchase of opium, morphine, coca leaves, cocaine, their salts and derivatives or preparations, excepting the purchase only of such as contain in small quantities, but it will also include the keeping of a record of every grain of the substances, which goes into the manufacture or compounding of any and all preparations, prescriptions or other orders, as well as of the *sale* of all which contain more than the minimum quantities allowed. Now the present day pharmacist on the drug side of his business has no more frequent and legitimate demand than for the preparations containing narcotics in some form which in some way will require the making of a record. If he is not required to record a sale of paregoric, he is required to record the making of such paregoric. If he is not required to record the sale of a liniment, he is required to record the making of such liniment. If he is not required to record the sale of an ordinary present day cough syrup, he will be required to record its making. Even if the regulations should not require the separate recording of a physician's prescription containing these narcotics, the need for making returns would nevertheless include such separate recording. As applied to present day methods in the average well kept, legally and honorably conducted drug store this requirement seems impractical and almost impossible. When we

have in mind, that the largest part if not all the evils which result from interstate traffic in narcotics, are found where the respective states lack authority to restrict and supervise, then for the present at least we must conclude that such intended regulation as applied to the retail druggist is entirely unnecessary. It has yet to be shown, that state supervision and regulation of this traffic within the state, is either insufficient or impossible to be made sufficient, but it has been shown, that state supervision of interstate traffic is insufficient.

3d. The requirement for a bond from the retail druggist, while evidently intended to reach and effect irresponsible persons, is nevertheless likely to be hardship on the average responsible retail druggist, because in most instances it would mean the purchase of a bond from a surety company with an annual fee attached thereto, and since irresponsible persons can be sufficiently and effectively controlled by imprisonment for violation, the imposition of this additional burden, at least in so far as it concerns the retailer, is not well founded.

4th. The provision making it unlawful, for any but a registered person to ship or receive in interstate commerce any narcotics or any preparations, containing the named narcotics, beyond the minimum amount allowed, or other few exceptions stated, will apply with equal force to physicians' prescriptions. On the border line of the several states this may result in much unnecessary hardship and difficulty, and therefore this provision should have careful thought and study.

5th. The provision under which the burden of proof is placed upon the defense as against the general rule of placing it with the prosecution is for the purposes of the intended law to be approved. Since rightful possession is easily shown by registration, or by having received from a registered person for legitimate, and in such case, personal use, there can be no valid objection to the provision, when we have in mind the great difficulty which the authorities have found in the past, to prove possession for improper purposes.

6th. The exception made with reference to minimum quantities of opium, etc. and with reference to liniments and ointments for external use, are entirely inadequate to meet the objection which must come from the retail druggist as with reference to record keeping and making of returns. It may be satisfactory to the manufacturing and jobbing interests, because they do not otherwise deal in minute quantities to any great extent, though of course there is no desire to belittle the amount of extra work and trouble which nevertheless will come to both the manufacturer and jobber. At the same time this specific exception will undo one of the most beneficent and commendable results of the intended law as provided for in Section four (4) of the Bill by allowing the indiscriminate sale of all so-called patent and proprietary preparations, containing these narcotics within the prescribed limit to unqualified or unregistered people, that is, direct to the consumer. If the pharmacists of this country have any right whatever to assert themselves, they certainly do have the right to demand that the sale and distribution of narcotics and preparations containing narcotics no matter in what quantity, be reserved exclusively to qualified people, in so far as this is possible. While registration will not be limited exclusively to qualified persons, it at least will work greatly in that direction, and since the legitimate consumer is never

likely to be a registered person, this very result of Section 4 should certainly be maintained and not allowed to be undone by the exceptions provided in Section 10. There is no safeguard more necessary to the public health than to restrict the sale and distribution of narcotics to qualified persons, and when their sale to the consumer is practically made impossible in interstate commerce it will be a question of short time only until the respective states will see to it that within their respective jurisdictions the sale and distribution to the consumer is limited entirely to qualified people. As much as pharmacists should be opposed to the requirement for the keeping of records and making of returns on the part of the retailer, so or even more so, should they be opposed to this exception as shown in Section 10, and which evidently is intended as a concession, or at least made to appear so by some.

Having pointed out some of the objections to the Harrison Bill, in so far as it effects the retailer, it naturally occurs to reflect upon the possibility of suggesting suitable changes which will leave the intended law to serve properly the intended and really necessary interstate commerce supervision. In this connection we must not be unmindful of the right for consideration which both manufacturer and jobber demand and have, and any change which we propose should not be to their respective disadvantage, and should not add to the burden of conducting their respective legitimate business. We do maintain that the sale of narcotics or preparations containing narcotics, in any quantity, direct to the consumer should be restricted to qualified persons. In so far as manufacturer and jobbers differ in this from the retailer, the retailer has a right to be firm in his position. Beyond this however the retailer should have no desire to add to the troubles of the manufacturer and jobber in securing efficient regulation of interstate traffic in narcotics. It is anticipated that both manufacturer and jobber will aid to point out, that to relieve the retailer of the need to keep records and making of returns, is inconsistent and dictated by self-interest only, without due regard to the troubles and burdens of others. On examination however this will not be found true, because we must have in mind that the intended regulations concern interstate traffic only, and it is because of lack of regulation and supervision for this interstate commerce that the evil exists. Now the retailer is for all practical purposes limited to the doing of a business within the state, while the manufacturer particularly is doing business throughout all of the states, and the jobbers' business or at least a substantial part of it is also interstate. Therefore, state supervision as applied to the manufacturer is entirely insufficient, state supervision as applied to jobbers is in part insufficient, and since it is impractical to leave that part of the jobbing business which is within the state to state supervision alone, and the other part of the business which is without the state, to Federal supervision alone, it would seem entirely proper, that all of the jobbers' business should come within the supervision of the Federal Government. On the other hand since the retailer's business is usually within the state and by the operation of the intended law will necessarily be limited to within the state, it is equally proper that its supervision should remain with the respective state authorities. Believing that the objectionable features in Section 10 have been embodied in the Harrison Bill largely in the interest of the manufacturer and job-

ber it should therefore be the aim to preserve this advantage to them, and at the same time remove the objectionable features from the retailer's view point. By omitting entirely Section 10, and by changing and then adding a proviso to Section 3 of the Harrison Bill, this may be possible, and the following change in Section 3, is submitted for that purpose.

Add in Section 3, line 18, after the word "account" the following words: "with intent to sell otherwise than at retail, or with intent to in whole or in part distribute or sell in interstate commerce any of the foregoing drugs etc." After the word "prescribe" in line 22, add the following proviso: "Provided however that nothing contained in this section shall require the keeping of records or rendering of returns with reference only to the sale, distribution or disposition of preparations and remedies which do not contain more than two grains of opium, etc.," so that Section 3 as changed will read as follows:

"Section 3. That every person, importing, exporting, manufacturing, remanufacturing, compounding for his own account, with intent to sell otherwise than at retail, or with intent to in whole or in part distribute or sell in interstate commerce, or who distributes or offers for sale or sells in whole or in part in interstate commerce any of the aforesaid drugs, their salts, derivatives, or preparations, shall keep such books, render such returns, and give such bonds as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may from time to time prescribe. Provided, however, that nothing contained in this section shall require the keeping of records or rendering of returns with reference only to the sale, distribution or disposition of preparations and remedies which do not contain more than two grains of opium, or one-fourth of a grain of morphine, or one-fourth of a grain of heroin, or one grain of codeine, or their salts and derivatives in one fluidounce, or, if a solid or semisolid preparation, in one avoirdupois ounce; nor to powder of ipecac and opium, commonly known as Dover's powders; nor to liniments or ointments which are prepared for external use only: Provided further; that such remedies and preparations are sold, distributed, or disposed of as medicines, and not for the purpose of evading the provisions of this Act."

With the above changes it will be noted, that the retailer who confines his business to his home state would be relieved from keeping records, rendering returns and the giving of bond, unless this be required under the laws of his state. At the same time it will make it unnecessary for manufacturer and jobbers to keep a record and render returns with reference to the sale of preparations which contain the minimum quantities, just as is provided in Section 10. Finally it retains in the intended law to the fullest extent the provision under which it would be unlawful for any one in interstate commerce to sell to any one who is not registered under the law, and consequently it would prevent the sale of such articles direct to the consumer in interstate commerce, no matter in what quantity narcotics might be contained in such articles. Unless it is deemed well to make an exception with reference to physician's prescriptions, this simple change of the present Harrison Bill, should make it entirely satisfactory to the retail pharmacists of this country, and undoubtedly it would be a great step forward in preventing the evils which now exist because of a lack of supervision and regulation of interstate commerce with reference to the trafficking in narcotics.

A. FEW IDEAS ON EDUCATION AND LEGISLATION.

THOMAS H. POTTS, SECRETARY OF THE N. A. R. D.

To anyone who has sincerely the real interest of the retail druggists at heart, it must be very interesting to listen to the arguments pro and con that are engendered when the subject of the uplifting of pharmacy and the elevation of the pharmaceutical standard is broached. In my estimation it is absolutely necessary that each one of these issues subserve the other. From practical facts obtained from many years of actual experience, I am more than ever convinced that unless the young man has an inherent aptitude for pharmacy, it would be futile and absurd to even endeavor to teach him the ordinary rudiments of a pharmaceutical education, yet speaking from the other point of view, and it is more or less from a personal practical experience, I have seen many young men who from financial considerations were unable to obtain more than an ordinary common school education, but the rudimentary ideas were deeply implanted and if they were so fortunate as to secure service with an experienced and practical pharmacist it was to them like entering a new school where every day something new coming up was observed and accepted into their brain receptacle. I know of no calling that gives the really observing young man the opportunity for self-education as does that of pharmacy, and again so much depends upon the standard of their preceptor. I believe that all of us pharmacists of many years experience who have employed new clerks from time to time could in a short time determine just what kind of an employer he last had.

In this progressive age with the educational qualifications so easily and cheaply obtained, I fully believe that not only in the interest of the matriculant himself, but in the greater interest of the conservation of public health there should be an insistence on a higher educational standard for the embryo pharmacist. Accomplish this and the uplifting of pharmacy follows. The fact remains that unless the qualification, the standard of requirement, is elevated our pharmacists may never hope to reach that standard so much desired and required in this progressive age.

The uppermost issue of today in pharmaceutical circles is legislation, both state and national. The great trouble in the past has been that concentration of efforts has been made to promote legislation that was impracticable. The different State Association Legislative Committees at a large expense of gray matter and valuable time, which often could be illy spared, met from time to time and formulated legislative acts for introduction into state legislation on lines that seemed to be just what was wanted, yet when the practical politician got his opportunity it was soon torn into shreds. This procedure, of course, does not apply to all pharmaceutical measures, yet I regret to say it is the fate of many.

State legislative acts based upon the National Pure Food and Drug Law were practically nullified in many instances by insertion of amendments absolutely relieving the self-dispensing doctor, dentist or veterinary surgeon of its operations. This faulty legislation, I am pleased to say, is being rapidly remedied in many of

the states. The sale of dope is now being largely controlled by state legislation, but this legislation does not reach the principal evil and that is the interstate traffic, which can only be properly controlled by national legislation, and we all should give our utmost exertions to promote such national legislation as will control this iniquitous traffic. "Where there is a will there is a way," and every honest pharmacist should be willing to be a little troubled in the matter of keeping and transmitting record of his sales of inhibited narcotic drugs so that the National Department may properly and legally control the situation.

Again speaking of endeavoring to do the impractical, I would state that I fully believe the Pure Food Department at Washington is entirely too radical in embracing in the list of inhibited drugs that are used in the preparation of proprietary medicines all those drugs that are known to have or supposed to have narcotic therapeutic effect upon the human economy. We have succeeded in the last five years in almost completely throttling the iniquitous traffic in cocaine. Now why not concentrate our efforts solely upon similar traffic in opium and its derivatives and after we succeed in this laudable effort, combine our efforts upon the next few prominent drugs that are habit-forming and capable of most serious results? Again I repeat we want to accomplish too much at one time, which renders our efforts in a great measure impracticable.

CONFIDENCE TO BE OBSERVED BY PHARMACISTS IN THE MATTER OF PRESCRIPTIONS.

To the Editor: Please let me know what the pharmacist should do under the following conditions: The prescription blanks of Dr. A announce two "associates," Dr. X and Dr. Y. Dr. A asked the pharmacist for a list of patients for whom Dr. X had prescribed, with the dates. Dr. X hearing of the request, advised the druggist that Dr. A had no right to any information concerning prescriptions that Dr. X had written. Some of the prescriptions written by Dr. X are on blanks with his name only at the head. Dr. A asserts that Dr. X has no right to use individual blanks under the terms of their contract. Should the list be furnished to Dr. A? J. K. S.

ANSWER.—The physician who writes it, the pharmacist who fills it and the patient for whom it was written are the only parties who have any right to a prescription. The fact that Dr. X wrote prescriptions on several kinds of stationery is immaterial. They were all signed by Dr. X and except through the courtesy of Dr. X should not be subjected to inspection. True, the prescription blanks of Dr. A announce that Dr. X and Dr. Y are his "associates," and our correspondent, a pharmacist, has knowledge that some kind of a contract has been entered into by A and X. The terms of the contract are not here defined and the relationship implied in announcing X as an "associate" is too indefinite to warrant the pharmacist giving A information concerning the prescriptions in question. In other words, physicians "associate" in the use of common offices; in assisting each other when more than one person is required to render needed service; in one substituting for the other when the principal attendant is engaged, or on his request; in one performing laboratory work or making special investigations for the other; and occasionally physicians are associated in a full partnership as in any business. Only in a full partnership is one of the associated physicians warranted in treating the business acts—the prescriptions, for example—of the other as his own, or asking another to regard them in this light.

The best course for the pharmacist to follow is to provide X with the data A requests and advise A of this, leaving A to obtain the information from X.—*Journ. A. M. A., Nov.* 16, 1912, *p.* 1813.

Section on Practical Pharmacy and Dispensing

Papers Presented at the Sixtieth Annual Convention

A UNIFORM EXTRACT OF CUDBEAR.

H. V. ARNY, PH. G., PH. D., NEW YORK, N. Y.

After the excellent work done on cudbear during the past year by Raubenheimer, Gardner (Druggists Circular 55-1911-518) and especially by Beringer (Journ. A. Ph. A. 1912, p. 820), further reports on this coloring agent would seem at first glance scarcely necessary. But inasmuch as the writer's interest in cudbear is chiefly as referee on the subject for the National Formulary Committee, and especially as the findings of the previous investigators did not lead to a product suitable for the Formulary, the experience of the writer may be worth citing.

As has been elsewhere stated (American Druggist 59-1912-49), the Committee on National Formulary, at a conference held in Boston last August, did not adopt any of the several suggested schemes of standardizing tincture of cudbear by means of colored fluid and requested the sub-committee charged with this particular phase of the work of revision to take up the problem of preparing extracts of uniform tinctorial power.

At the last meeting of this Association, two such extracts were suggested, one alcoholic, the other made with acetone, and the writer has already reported his findings (Practical Druggist, April, 1912, p. 24), on such extracts from four samples of cudbear.

He showed that the alcoholic extracts contained appreciable quantities of the sodium chloride, which is a usual admixture of commercial cudbear, and the strongest of the eleven extracts prepared from the four samples by different means of extraction had five times more tinctorial power than had the weakest. The acetone extracts, suggested by Mr. Gardner, were more uniform. Four extracts from the four samples of cudbear were prepared and while the color of a 1 to 1,500 dilution of the strongest was matched by a dilution of 1 to 1,000 of the weakest, the other two extracts showed similar tinctorial power in dilutions of 1 to 13,000 and 1 to 14,000 respectively. This shows that these acetone extracts are more uniform in color than are those made from alcohol, but the weakest, having only two-thirds the color strength of the strongest, made the practicability of the acetone extracts problematic.

As extraction of cudbear with chloroform in the writer's laboratory showed that that solvent did not remove the purple-red pigment but did extract the

mahogany colored dyes, the plan of extraction of cudbear, first with chloroform and then with acetone, was tried and that with much success.

THE "A. C. A." EXTRACTS.

In the experiments reported in the Practical Druggist, of the alcoholic extracts prepared, four were from four different samples of cudbear, made by extracting 100 grams of the coloring agent with cold (U. S. P.) alcohol until 1000 cc. of percolate were obtained, and after recovery of most of the alcohol by distillation, the residue was evaporated on a steam radiator to constant weight.

By this means, four dry extracts were obtained, the yield from the four samples of cudber being 12.7, 15.1, 18.3 and 12.4 percent. respectively. As mentioned above, these four extracts varied greatly in tinctorial power; the four in dilutions of 1 to 10,000 matching orcein dilutions of 1 to 120,000, 1 to 300,000, 1 to 100,000 and 1 to 160,000 respectively.

Of these alcoholic extracts, the sample from drug No. 1 was used up on fruitless experiments, but 10 grams of each of the extracts, Nos. 2, 3 and 4, were macerated to exhaustion with chloroform and then extracted with acetone. The chloroform extract was of a mahogany-brown tint, turning more or less purplish with ammonia. The acetone dissolved only a part of the residue, the acetone-insoluble part consisting largely of crystals of sodium chloride. The three resulting extracts made by successive use of alcohol, chloroform and acetone will hereafter, in this paper, for the sake of brevity, be called "A. C. A." extracts; ten grams of the three alcoholic extracts yielding respectively 1.42 gm., 1.65 gm., and 1.31 gm. of "A. C. A." extracts Nos. 2, 3 and 4.

THE "C. A." EXTRACTS.

It is plain that the above described "A. C. A." extracts were produced by a cumbersome process and the next step was to see whether initial percolation with alcohol was necessary; so samples of cudbear Nos. 1, 2 and 3 (sample No. 4 having been used up) were directly percolated, first with chloroform and then with acetone. In each case, 100 grams of the dry cudbear were loosely packed in a narrow percolator, fitted with receiving bottle and glass tubes so as to constitute a volatile liquid percolating apparatus, and the sample was percolated to exhaustion with chloroform and then with acetone, the latter solvent being poured directly on the drained drug without the need of removal from percolator and repacking after drying. Of course, the first liquid dropping from the percolator after adding the acetone is the chloroform remaining in the drug, but this can be easily separated as chloroformic extract, inasmuch as the acetone percolate so soon as it reaches the bottom of the percolator, colors the pledget of cotton found there as straining medium, an intense crimson, that is a marked contrast to the practically colorless final portion of the chloroformic percolate.

Both solvents were recovered from their percolates by distillation, and the thin acetonic extracts were dried by "scaling." After 24 hours, the scales were dry enough to scrape from the plate and were then dried in air to constant weight. The figures given below as to yield relate to the fully dried extract, and as, of

course, some of the extract adhered to the scaling plates, the yield was somewhat more than here reported.

The following tabulation gives the data of manufacture:

"C. A." EXTRACTS FROM 100 GM. CUDBEAR.

Sample No.	Chloroform Figures cc. Used	cc. Percolate	cc. Distillate	Acetone Figures cc. Used	cc. Percolate	cc. Distillate	Yield Ext. (in gms.)
1	500.	450.	340.	450.	395.	345.	3.10
2	200.	185.	170.	350.	327.	305.	3.11
3	300.	280.	250.	300.	212.	185.	2.59

From the foregoing, it will be seen that 3.11 gm. "C. A." extract No. 1, was obtained at the cost of 100 gm. cudbear, 160 cc. chloroform and 45 cc. acetone; that 3.10 gm. extract No. 2 was obtained from 100 gm. cudbear with a waste of 30 cc. chloroform and 45 cc. acetone; and that 2.59 gm. "C. A." extract No. 3 meant using 100 gm. cudbear, 50 cc. chloroform and 115 cc. acetone. This means that the finished extract will be rather expensive, but when it is realized that to color a gallon of alkaline antiseptic solution will require one, or at most, two grains of the extract, the initial cost acquires less significance.

PHARMACY OF THE "A. C. A." AND THE "C. A." EXTRACTS.

The finished extracts are reddish-brown granules or scales with a greenish lustre and are very slightly hygroscopic. They do not readily dissolve in water, but are instantly soluble in water containing ammonia, and are very soluble in alcohol. At the beginning of the experiments, ammoniated aqueous solutions were prepared and these on evaporation yielded ammoniated extracts which were instantly soluble in water, but as such extracts were found to lose solubility with aging and consequent loss of ammonia, the use of an alcoholic tincture was found to be a better procedure. Experience showing that there was likelihood of precipitation of some of the color when this alcoholic tincture was diluted with water, a trace of ammonia was added, when the resulting product became freely miscible with water.

So latterly a tincture consisting of the extract, 1 gram; 10 percent. ammonia, 2 cc.; and alcohol to make 1000 cc., was employed.

COLORIMETRIC COMPARISON OF EXTRACTS.

While dilutions of the alcoholic percolates of cudbear matched dilutions of commercial orcein as has been pointed out both by Mr. Beringer and the writer, the pure purple-red pigment of cudbear and likewise the acetone extracts, have a shade quite different from orcein, which therefore cannot be satisfactorily employed as a standard for matching.

Merely as starting point, however, the writer will say that even as he has previously reported that a 1 to 40,000 dilution of orcein roughly matched a 1 to 10,000 of straight acetone extract from cudbear, so he will now report that a freshly prepared 1 to 4,000 dilution of the same orcein roughly matched a 1 to 30,000 dilution of "A. C. A." extract.

Experiments proved that the tints of the dilutions varied not merely as to

whether they were acid or alkaline, but also according to the quantity of ammonia present, and as disregard of degree of alkalinity made the first matchings futile, in those reported below all dilutions were of uniform alkalinity, each being started from 1 cc. of a tincture consisting of the extract (or orcein) 1.0 gm., 10 percent. ammonia, 2 cc., and alcohol to make 1000 cc. In order to avoid variation in ammonia strength, enough of the alkaline menstruum was prepared at one time to make all of the tinctures used at that time.

Finding that attempts to match with orcein were futile, there were prepared 1 to 40,000 dilutions of the six "A. C. A." and "C. A." extracts which were on hand. These, when fresh, so closely simulated each other that a separate set of 1 to 50,000 dilutions were prepared and the twelve fluids, placed in two-ounce tall Blakes, were submitted as unknowns to three observers, whose reports as to color sequence, with darkest first, are given below:

MATCHING "A. C. A." AND "C. A." EXTRACTS.

Observer I		Observer II		Observer III	
"A. C. A." No. 2	1–40,000	"A. C. A." No. 2	1–40,000	"A. C. A." No. 2	1–40,000
"C. A." No. 3		"A. C. A." No. 4		"C. A." No. 2	
"C. A." No. 1		"C. A." No. 1		"A. C. A." No. 3	
"A. C. A." No. 4		"A. C. A." No. 3		"A. C. A." No. 2	1-50,000
"C. A." No. 2		"A. C. A." No. 2	1–50,000	"A. C. A." No. 4	
"A. C. A." No. 3		"C. A." No. 2	1–40,000	"C. A." No. 1	1–40,000
"A. C. A." No. 4	1–50,000	"C. A." No. 3		"C. A." No. 3	
"A. C. A." No. 2		"A. C. A." No. 4		"A. C. A." No. 4	
"C. A." No. 1		"C. A." No. 2		"C. A." No. 1	
"A. C. A." No. 3		"C. A." No. 1	1–50,000	"C. A." No. 2	1–50,000
"C. A." No. 2		"C. A." No. 3		"C. A." No. 3	
"C. A." No. 3		"A. C. A." No. 3		"A. C. A." No. 3	

These results are so at variance as to seem worthless at first glance, but careful study shows that they strikingly prove how close is the tinctorial value of the six extracts. In the first place, note that, with the exception of one sample, all of the 1 to 40,000 dilutions were clearly distinguishable from the 1 to 50,000 dilutions, and while two observers placed the "A. C. A." extract No. 2, 1 to 50,000 among the 1 to 40,000 dilutions, the other observer placed it as the second lightest of the 1 to 50,000 dilutions.

As to order of sequence reported by the three observers, let it be understood that all three agreed that the color of the 1 to 50,000 dilutions on one hand and of the 1 to 40,000 on the other (with the one exception cited above) were so close that discernment of difference was scarcely short of guesswork, hence the writer feels justified in employing the adjective "uniform" for the chloroform-acetone extracts which he has prepared.

CONCLUSIONS.

In the writer's hands, uniform cudbear extracts have been prepared by percolating the drug, first with chloroform to remove the brown pigment, and then with acetone; the acetone percolate being distilled and the thin extract thus obtained dried by "scaling."

This extract is soluble in water containing ammonia and in alcohol, and a faintly ammoniacal alcoholic tincture is freely miscible with water.

The tinctorial power of this extract is approximately three times that of a straight acetonic extract and about 300 times that of an average sample of tincture of cudbear, N. F.

As to uniformity, six samples of these extracts in a dilution of 1 to 40,000 were practically identical in tint and in intensity.

Of the six extracts just mentioned, three were prepared by making an alcoholic extract, removing the brown pigment from this by maceration with chloroform and extracting the residue with acetone; the acetonic solution being then distilled and the residue "scaled." This first step—alcoholic extraction—is, however, superfluous.

COLUMBIA UNIVERSITY, COLLEGE OF PHARMACY, AUGUST, 1912.

THE RED COLORING PRINCIPLE OF CUDBEAR.

ALEXANDER GARDNER, PH. G., BROOKLYN, N. Y.

At the 1911 meeting of the A. Ph. A. held at Boston, a preliminary paper was read and discussed by Alexander Gardner and Otto Raubenheimer in reference to Cudbear. At that time the active principle was extracted by percolating the drug with acetone and evaporating the colate to a soft extract. This process while a step forward in the right direction was afterward abandoned owing to the amount of wax extracted which made the mass undryable.

After considerable experimenting by the author, a cheap process was obtained whereby the cudbear was packed firmly in a percolator and percolated with purified petroleum ether until entirely free from wax (which requires about 2500 cc. to 1000 gm. of drug) after which the drug is subjected to desiccation.

The drug is then repacked and percolated with acetone (which will require 2500 cc. acetone for thorough exhaustion). The colate is then placed in a still and the acetone recovered, or it can be evaporated spontaneously, after which the resulting mass is placed in a porcelain capsule and heated to 210 F. for thirty minutes. The mass is then pulverized and placed in a sulphuric acid desiccator for three days during which time it will lose about 25% of its weight.

This extractive I have designated as Persionin.

Persionin is a black lustrous powder with an aromatic odor, soluble in alcohol, glycerin, chloroform, ether, and hydroalcoholic liquids, but is only sparingly soluble in water.

The following has been the yield of 5 samples of drug.

First sample	6.5% of persionin
Second sample	7 % of persionin
Third sample	6 % of persionin
Fourth sample	5 % of persionin
Fifth sample	5.5% of persionin

Each sample of persionin was tested by dissolving 1:100 in alcohol and glycer-

in 3. One cc. of this was added to 99 cc. of distilled water, in each particular the color was the same.

DISCUSSION.

Philip Asher inquired of Prof. Arny whether he had tried his tincture in acid solution, and what the effect was.

L. E. Sayre inquired as to the use of the name, "persionin." It seemed to him very unfortunate. "Persionin" would indicate that a definite principle was had here.

E. F. Cook said there was one point in regard to cudbear which he had not seen brought out by any of the investigators, and that was as to the purification of commercial cudbear by simply removing the sodium chloride, which existed in greatly varying proportions, thus causing a great deal of variation in the tinctorial power of the commercial article. If it was practical, the plan now tentatively adopted by the National Formulary, adding a definite weight of cudbear to preparations and allowing them to macerate twenty-four hours, would probably be as satisfactory as the more elaborate method now proposed.

Answering the question of Prof. Asher as to acid solution, Prof. Arny said he would like to have the experience of some of those who had been working on cudbear, as with most cudbear preparations one of the difficulties to be contended with was their behavior with acid. He was frank to say that the extract he made was precipitated by acids. In trying it out in color matching to which he had given considerable attention, he had discovered that if the menstruum was largely alcoholic it would stand acids. Another point which he had brought out in his paper was one which was generally overlooked in color-matching. In a four-ounce solution, the addition of one drop of five percent ammonia water would make a marked difference in the purple produced.

Answering Prof. Sayre, Prof. Arny said he too desired to enter a protest against Mr. Gardner's use of the word "persionin" for the substance obtained by him. He had given full credit to Mr. Gardner for his work, as could be found from his paper, but it seemed a pity that Mr. Gardner should spoil his acetone extract by giving it a name which was not correct. He (Arny) had simply given a modification of the Gardner process, and the best proof of the relative merits of the two processes lay in the fact that Mr. Gardner said he got a 6% yield of active principle from cudbear, while the yield of Arny's acetone extract was only 3%. Prof. Arny said he would be satisfied to call the product Gardner's acetone extract. Mr. Gardner's paper was too useful a contribution to the literature of this subject to quibble over a point like this, but the name persionin was nevertheless a misnomer.

Answering Prof. Cook, Prof. Arny said he had not tried percolating cudbear with water to extract the sodium chloride, but from the work he had done he was inclined to believe it was not feasible. One of the greatest reasons for the deviation in the tints of cudbear was the brown coloring matter which Mr. Beringer had described before the New Jersey Pharmaceutical Association.

His assistant, Mr. Horstmann, had planned to give a paper on the result of his chemical analyses of the three samples of cudbear which he had brought with him, the first showing thirty-one percent of ash, the second twenty-two percent, and the third only seven percent. This variation in ash content was a sufficient explanation of the variation in color tint. Next year, he said, he hoped to be able to present more fully before the Association this phase of the cudbear question.

E. F. Cook said that very often the difference in tinctorial power of the tincture was due to the fact that pharmacists did not exhaust all the cudbear. This had led him to wonder if percolation was the best way to extract this principle, or whether it was best to extract it with maceration, or by percolation with some inert substance before percolation.

Prof. Arny replied that, adopting a device that Mr. Raubenheimer had suggested, he had no difficulty in percolating cudbear by packing it, not tightly but loosely, when dry. Again referring to the paper read by Mr. Beringer, before the New Jersey Association, he said the author had recommended powdered cork for the percolation of cudbear.

Referring to the matter of cost of his several percolates of cudbear exhibited here, Prof. Arny said that the work was done in the hottest part of the year, and the cost of the first

on the basis of $2.50 an ounce for the extract was $1.22 for half an ounce, or 14 grams. The second, which chanced to be made at a cooler time, cost 55 cents for a half ounce, or $1.10 for the ounce, while the third cost $1 for half an ounce, or $2 an ounce. Inasmuch as two grains of the extract was enough to color a gallon of solution, he did not regard the cost as of much consequence. It had about 300 times the power of the ordinary cudbear.

F. W. Nitardy, referring to the question put by Mr. Cook, asked if anyone had ever tried mixing the cudbear with sand before percolating it. He had used that method in the laboratory with fairly good results.

WHAT IS ADULTERATION?

THEODORE J. BRADLEY, BOSTON, MASS.

The title of this paper presents a query that admits of many answers. It is almost like asking "What is a gentleman?" or "What is an education?" questions on which there is a wide difference of opinion, though, fortunately, some definiteness of conception. The popular idea of adulteration is that it always consists of the addition of cheaper ingredients, often harmful, to foods, beverages, drugs, confectionery, and other commodities. Very likely this was the original form of adulteration and it is often practised, but it comes very far from comprising the whole meaning of the word.

The number of causes by which an article may depart from standard quality is large and a complete list of them is difficult to give. The matter is complicated by the fact that several causes may effect a single case and there is much overlapping among them. The following are most important, the examples given being selected from a large number of possible ones, and they are not all from pharmaceutical sources.

I. Admixture with a foreign substance. This is the traditional and direct form of adulteration as exemplified by the crude notion of using sand to adulterate sugar. The dilution of milk with water is a simple and common example of this form of adulteration. It has been carried to ingenious lengths, as in the manufacture of cheese from skimmed milk which contains oleomargarine added to replace the butter fat.

II. Abstraction of valuable constituents, as the selling of spices and drugs from which important constituents have been extracted; of skimmed milk as whole milk, and many other instances.

III. Sale of an imitation for the genuine article, as colored diluted acetic acid for cider vinegar, colored diluted alcohol for whiskey, butterine for butter, acidulated solution of epsom salts for citrate of magnesia, etc. Some of these artificial products had such an illegitimate birth as this, but have become well known and now have a market of their own.

IV. Substitution, or the sale of one article under the name of another. This closely resembles the preceding but differs enough from it to be considered separately. We must confess that pharmacists have frequently been sinners in this respect. Examples are found in the sale of carbolic acid for creosote, acid phosphate of lime and other chemicals for cream of tartar, various coal-tar products for each other, and so on.

V. Variation from standard strength, as in the case of many pharmaceuticals like the diluted acids and various galenicals having a standard alkaloidal strength. It is important to remember that too great a strength is as objectionable as the other.

VI. Offering for sale of deteriorated or decomposed articles, as diluted hydrocyanic acid, spirit of nitrous ether and other drugs which have lost their strength, more or less completely, and decomposed meats and other food products, including ice cream containing the deadly ptomains.

VII. Flavoring, coloring, or otherwise treating an article of inferior quality to make it appear to be of superior quality and selling it as such. An example of this is found in the so-called "renovated" butter which is low grade butter melted, washed with soda and otherwise made over.

VIII. Addition of harmful preservatives or coloring agents, many of which are likely to be used in canned and bottled goods of all kinds, and in pastry.

IX. Variation from standard quality because of improper or incomplete methods of manufacture, as the omission of the necessary aging of whiskey, the incomplete extraction of drugs and other instances. This also includes the failure to standardize certain preparations after manufacture, if this is called for.

X. Shortage of weight or measure. The common custom of calling twenty-four ounces a quart in bottling wines, and using the liquid quart in place of the dry quart are examples of this. Short weight seidlitz powders are familiar to some pharmacists.

XI. Failure to properly label when there is any ingredient present whose nature or amount should be stated, as in preparations containing morphine and some other alkaloids and preparations containing alcohol. Imitations, substitutions, and failures to properly label are all referred to as "Misbranding."

This is a formidable list, and it is not easy to give a brief definition of adulteration, though one is needed. Perhaps the best short definition that can be given is about like this:

A substance is adulterated when it differs in any respect from the properties, strength or quality which have been defined by some competent authority.

In the case of drugs the principal authorities are the United States Pharmacopoeia, and the National Formulary, and the National Board of Food and Drug Inspectors.

The present widespread agitation against adulteration was begun about fifteen years ago, probably because of the so-called "embalmed" beef furnished to our soldiers during the Spanish war. There are great copy making possibilities in the subject that appeal to the sensational writer, so the newspapers and magazines have been flooded with articles on it. This is of advantage in awakening and educating the public on the matter, but no one should allow himself to be misled into believing that all foods, drugs, beverages and confectionery, nowadays, are subject to adulteration, harmful or otherwise. To those who are informed on the conditions existing twenty-five and more years ago, the present outcry is like setting a trap after the game has taken the bait. It is a comforting fact that, with the exception of milk and its products, comparatively few cases of the adulteration of staple foods are found at the present time. When Massachusetts,

New York and other states began investigating and regulating adulteration, in the early eighties, conditions were indeed bad and a great deal of time could be spent in citing old instances of adulteration by the crudest of methods. This, however, is now a matter of history and it is enough to say that the persistent campaign begun then, and continued until the present, has greatly reduced the number and kind of offenses of this sort, but it has not entirely done away with them.

Like all callings, pharmacy has men of many kinds within its ranks, and among them there have been some who have been deliberate adulterators, but, after more than ten years' experience in a state laboratory having charge of the inspection and control of the quality of the drugs sold in the state, the writer is firmly convinced that the pharmacist is very seldom a deliberate adulterator of his wares. On the other hand, because of carelessness or ignorance, he frequently sells or dispenses goods that are adulterated and it is difficult to make some pharmacists understand that they are responsible for this adulteration whether it is deliberate or not.

The enforcement of laws regulating adulteration should be carried out with great discretion by men well informed on the subject. A distinction between deliberate or harmful adulteration and gross carelessness or negligence on the one hand, and unintentional and inoffensive slight variation from standards, due to oversight, on the other, must be made. The sensationalist or over-zealous man in office, by a mechanical enforcement of laws and regulations, often does great injustice to men who are essentially innocent of any wrong. Fortunately such officers are not often upheld by the public and their careers are short, but some individuals may suffer greatly because of their misdirected zeal. The rational method of dealing with the subject is to prosecute and punish, ordinarily, only the persistent and deliberate and serious offenders. It is a fact that notification to the pharmacist of his offense is nearly always sufficient to stop a particular case of adulteration and it amounts to a persecution to severely punish a man who is anxious to do the right thing and only needs to have his error pointed out to him to induce an avoidance of it thereafter. This, of course, does not excuse the error which might result in harm to someone, but a distinction must be made between the degrees of an offense.

The pharmacist's position is a perplexing one, but not hopeless by any means. Of the various forms of adulteration, several are only likely by deliberate action. Those that are most troublesome are variation from standard strength, and inferior quality due to deterioration. It is not possible to shift the responsibility to the manufacturer or wholesaler in many cases. There is but one solution to the problem of how to deal with adulteration and that is found in eternal vigilance backed up by a large stock of information on the subject acquired by thorough training in our profession and constant reading of periodicals and newspapers.

MASSACHUSETTS COLLEGE OF PHARMACY, July, 1912.

DISCUSSION.

W. A. Puckner said he was pleased to hear one statement by the writer which agreed with a statement that he had recently made, viz.: that largely-used articles, whether medicines, foods or other commodities were likely to be pure. Where there is great competition a good

product will be put on the market and purchased. This was one of the arguments which the Council on Pharmacy and Chemistry of the American Medical Association used in its propaganda for a restricted materia medica. Pharmacists should use only those drugs which are known to be good. If it was true that the preparations spoken of by the writer contained half a dozen different kinds of hypophosphites and acids, it showed that as to these very complex preparations the pharmacist sat upon a regular "dynamite mine," which was liable to explode at any time. He was using hundreds of drugs regarding the quality of which he was absolutely ignorant, and which he could not take the time to examine, and this was one reason why pharmacists should aid in the propaganda to restrict the medicaments used by the medical profession—to get away from complex mixtures, and stick to simple remedies.

G. H. P. Lichthardt heartily agreed with the statement that most of the adulteration in pharmacy was due to carelessness. He had occasion several years to examine certain specimens of citrate of magnesia, and had found in every case that their makers were using the old formula, having forgotten the extra acid added in the last revision of the formula. He believed this was happening every day. In his state where he had been engaged in this work for four or five years past, he had found pharmacists as a rule only too willing to cooperate with the authorities in the effort to keep down adulteration.

L. E. Sayre desired to call attention to the paragraph reading: "A substance is adulterated when it differs in any respect from the properties, strength, or quality, which have been defined by some competent authority." This, he said, was a very acceptable, condensed, definition of a standard for the administration of Food and Drugs Laws. This definition was especially valuable because frequently the administrators of the law were confronted with the question of standard where no definition adequate was found in the Pharmacopœia or National Formulary. Where a preparation was evidently adulterated and no recorded standard, such a standard would be valuable. It was not a question of wishing to prosecute vendors, but to stop the sale of adulterated preparations. A number of preparations had come to his laboratory where there was no definition or test in the Pharmacopœia or in the National Formulary by which to check their quality. If the above standard were applied it would serve a good purpose. Mr. Sayre said he thought there was a great opportunity here for applying the proposed tests. If an authority could be produced that would set a standard for a particular article, it would be greatly to the advantage of the administrators of the law and to pharmacy.

C. G. Clayton called attention to the duplication, or practical duplication, of names and formulas which had been suggested by the last two papers. Mr. Sass had displayed a specimen of elixir of iron, quinine and strychnine phosphates, and he had turned to a brother pharmacist at his side and asked if he had ever used that formula, eliciting the response that he used nothing except the elixir made from tincture of chloride of iron. He thought it inexcusable that, when one of these elixirs was prescribed, the other should be given; yet, when there was so nearly a duplication of names and formulas, with practically the same therapeutic effect, it was liable to create confusion in the minds of many dispensers. He thought this point worth considering by the compilers of the U. S. P. and N. F.

F. F. Gordon said he thought possibly it might be a good idea for this Section to go on record as defining the word "adulteration" in the words just read by Mr. Sayre from Mr. Bradley's paper, after which the matter might be referred to the Council for action, so that the Association itself might be placed on record as giving a clear and plain definition of the word "adulteration."

Caswell A. Mayo moved as a substitute that the definition of the word "adulteration" as set forth in Mr. Bradley's paper be recommended for consideration by the Committee on Resolutions of the House of Delegates.

The substitute was accepted by Mr. Gordon, and on motion was adopted.

Section on Historical Pharmacy

Papers Presented at the Sixtieth Annual Convention

THE NAVAL APOTHECARY SINCE THE CIVIL WAR—SOME HISTORICAL DATA AND PERSONAL REMINISCENCES.

FREDERICK T. GORDON, PHARMACIST, U. S. NAVY, RETIRED.

There have been such changes in the rank, status and duties of the naval apothecary since the days following the Civil War and there are so few of us old apothecaries left whose experience goes back to the times of the "old Navy," that I gladly comply with the request of the secretary of this Section to present what data I can of historical value to the Association. History is made up of dates, but history is chiefly interesting not on account of these dates but because of what people did on those dates, so at the risk of making my contribution more personal and reminiscent than statistical I will try to tell what the naval apothecary was, what he had to do and how he lived in the past and what he now is and does. Conditions are so different now from what they were when I first entered the service that the only comparison I can think of is the comparison of the ships themselves on which the apothecary serves, the difference between the old ship rigged auxiliary wooden corvette on which the life was about as leisurely as was the speed of the vessel herself and the modern dreadnaught whose crew are but the attendants of guns and machinery and where everything is done on schedule time and by scientific methods. The romance, if there was any, seems to have gone with the masts and spars of the old ships, the present day battleship makes as regular a schedule between ports as does a passenger liner and it is simply a question of burning coal to get anywhere. We had to wait until wind and water served, counting months at sea as one of the things that had to be endured as part of the regular course of events.

The status of the naval apothecary in the early days was considerably different from that of today; then he was practically a civil employee, subject of course to naval discipline; now he is a member of a highly trained organized corps and an integral part of the personnel of the navy. Then the apothecary was appointed by the ship's medical officer for the "cruise" or such time as his services were needed; he was not required to enlist for any definite time and in fact often did not enlist at all but simply held his billet as ship's apothecary at the pleasure of the medical officer and captain of the vessel on which he served. He had no benefit from continuous service, was not eligible for retirement and there was no promotion for him; in fact his tenure of office depended entirely upon the time of commission of the vessel on which he served. The rank of the apothecary was then, as now, that of chief petty officer and he was allowed a ration and was paid $60 a month. This was the apothecary afloat. On shore the condition was similar.

The apothecaries of navy yards and hospitals were really civil appointees, they were not required to wear uniforms and had the same status as other civil employees in regard to tenure of office and discipline. Their appointment was mostly by favor, that is when a vacancy occurred the medical officer of the navy yard or hospital selected some man known to him for the position and recommended his appointment, his recommendation usually being ratified by the authorities above. He had no status in a military sense, was not eligible for a pension except as having served during the Civil War and his appointment could be cancelled at any time. In fact he was carried on the payrolls as a civil employee and was considered as such in all respects. The only difference between the man ashore and the one afloat was that the former was treated as an enlisted man.

This was the condition when I entered the navy in 1890, with this difference, many apothecaries serving afloat were then taking advantage of the privilege of enlisting for regular service and thus being eligible for the benefits of continuous service and definite time of enlistment. The new entrant was compelled to enlist in the lowest rating of the "landsman" branch, that of landsman, pay $16 per month, depending upon the appointment of the medical officer of the ship to which he was assigned to secure the rating of apothecary, this appointment requiring only ratification of the commanding officer of the vessel and was only for the time the apothecary served on that ship. In 1893, I think, the Navy Department inaugurated a plan for providing for permanent service of petty officers, of which the apothecary was one, this consisting of a provisional warrant issued to men serving in the various ratings confirming them in their rate for one year, this warrant becoming permanent after one year's service in that rating on recommendation of the commanding officer. This was a great advance, for when the apothecary once obtained his warrant as a chief petty officer it was permanent during good behavior and on the expiration of his enlistment he was given an honorable discharge which entitled him to re-enlist as apothecary with increase of pay. Before this the man re-enlisting as apothecary had to enlist as originally, as a landsman, and take his chances of an early appointment to apothecary, sometimes having to remain on a receiving ship for months at the munificent pay of $16 a month. The pay of apothecaries continued to be $60 a month, with an added dollar per month for each re-enlistment. There was no promotion, the only fruit of long service being the reward of an assignment to a receiving ship, where one could go ashore nightly.

These rather indefinite conditions were all changed by the Hospital Corps bill of 1898 which for the first time established a definite organization for the Hospital Corps of the Navy and made it a part of the regular naval personnel. The rank of pharmacist, that of warrant officer, was created by this bill and all apothecaries were required to enlist, no matter where they served, and similar provision was made for the nurses, baymen as they were called in the olden days. This reform put the Hospital Corps on a practical basis and made the position of naval apothecary a definite one, with uniform requirements and status, and opened the door to promotion to officer's rank for the man enlisted in its ranks. Since then the organization of the Hospital Corps has been more and more perfected and its high standards of professional requirements and its definite promise of rewards for good conduct and work made it far more attractive to the young graduate in

pharmacy than did the uncertain conditions and future of years ago. The present pay of the hospital steward, the title now given to the naval apothecary, is $70 a month, with an allowance for uniforms on original enlistment and the usual navy ration allowance of 30 cents a day. He enlists for four years, after passing a physical and professional examination, and receives a permanent appointment to the rating after one year's good service and may be assigned to duty either ashore or afloat. After eight or ten years' service he stands a good chance for appointment as pharmacist, ranking as a warrant officer and receiving pay amounting to $1400 to $2000 a year and an allowance for quarters when on shore duty. As pharmacist he is eligible to retirement after forty years' service, or at the age of sixty-two, on three-quarters of his pay and allowances for life. Hospital stewards are eligible for retirement on three-quarters pay, etc., after thirty years' service. Quite an improvement.

Conditions of life aboard ship have changed even more than conditions of rank and status. When I entered the navy in 1890 we were just beginning to build steel warships and had a few cruisers which we fondly christened the "New Navy." Except that the new ships were built of steel and the old ones of wood, there was little difference between them as regards equipment and conveniences. Both were fully rigged with masts and sails and the majority of the crews were still sailors, not gunners and mechanics, as are the men of the battleships of today; and living quarters, ways of living and things generally were pretty much the same. The sick bay, the space set aside for the sick, was still usually a space in the very bows of the ship separated from the crew's living quarters by a bulkhead and the dispensary where the apothecary did his work was merely a small cell-like space either alongside the sick bay or somewhere on the berth deck out of the way. There was no such thing as an operating room dreamed of in those days; when an operation *had* to be performed the long table in the sick bay was covered with a rubber sheet and the surgeon proceeded to do the best he could, the apothecary acting as assistant. When a man was too sick to work, his hammock was slung on hooks in the sick bay and he was nursed as best one could, fed with "grub" from his mess unless very sick, and then with food from the officers' mess and washed when required with a sponge and bucket of water. If the man had a broken leg the best we could do was to lay his hammock on deck with perhaps an extra mattress; later we had swinging canvas cots which were an improvement but a nuisance both to patient and caretakers. Toilet facilities were usually a covered bucket; ventilation, when there was any, came through a hatch opening to the deck above, unless we were in port and could open the portholes, and light came from oil lanterns at night.

The dispensary, as I have mentioned, was a small place with a work counter on one side, above which were racks of bottles and in drawers below, space for keeping various articles of stock, and a locker with shelves on the other side. This locker usually had a folding seat or sometimes a permanent ledge about a foot wide, where patients might be seated for examination during the day and on which the apothecary made his bed as best he could at night. Some of the old ships actually had bunks for the apothecary, and I remember with what jealousy I saw the palatial couch of the Charleston and compared it with the two-foot plank that I had rigged up for my bed. The dispensary on the first vessel on which I served

was directly over the ship's boilers and when we were at sea under steam the dispensary became so hot that candles would melt and run together. Then I would take my hammock and mattress and sleep on deck in the coolest place I could find. Our supplies were very limited, mostly staple drugs and a few fluidextracts and tinctures. Pills when called for we made, capsules were a luxury only for the few, and "elegant" pharmaceuticals were unknown. In my first supplies I had fluidextracts made by Squibb as far back as 1870, but as they were never used, I have no idea of their efficiency at the age they then were. Everything was the simplest and crudest, the scales, for example, being the old style swinging balance on which it was impossible to weigh anything when the ship was at sea and rolling around. We got so skillful that we could guess weights within five or ten grains and let it go at that, of course being more careful with potent drugs, morphine, for instance, which I have known to be measured on the point of a knife blade in emergency. Yet we had few sick and most of them got well. The nursing of the sick was equally crude, the nurses, baymen as they were then called, were usually men who were assigned for that duty because they were worthless about decks and had about as much idea of sick nursing as they had of theology. My first two nurses were an ex-cavalry sergeant and a marine detailed for the duty as being too stupid for even a marine's duties, their sole ideas of nursing consisting of giving patients their medicine in liberal doses and taking their temperatures.

In those days water was the most envied possession on shipboard, all of our fresh water being carried in tanks replenished at intervals from the shore or when at sea from condensers, and I was an envied one because I could generally get an extra gallon or two of fresh water from the hold on plea of needing it for the sick. Now fresh water may not seem of much importance to the landsman, neither is it so precious aboard ship these days, but then fresh water was a luxury. Not only did we have to use salt water for washing clothes but for personal cleanliness as well, and salt water in the long run is not conducive to comfort. We used to wash carefully in a panful of water, saving this daily until we had a bucketful and then use that for the first washing of our clothes, after which salt water had to be used for the rinsing, as every man was his own laundry then. Similarly, in the dispensary my accommodations were a wash basin and pitcher and a bucket, and these had to be used for all purposes. Hot water was obtained painfully by means of a pan and an alcohol lamp. As with water so it was with everything, there was just so much of a thing and when that was used you had to do without. If our supply of one drug was exhausted we used the next best until we could get fresh supplies and the substitution that we had to do would shock an ethical pharmacist into his grave. Often have I made blue ointment and protoiodide of mercury from iodine and quicksilver.

Nowadays the sick bay of a battleship is like the ward of a modern hospital, comfortable cots, bath rooms, unlimited water, electric lights and unlimited fresh air from separate ventilators. In my time we had to use lard oil lamps and lanterns and often the air in the sick bay was so foul that aromatic oils had to be sprayed around to make it possible to stay there at all. The sick bay is heated in cold weather by steam, there are electric fans for hot weather and everything possible is done for the care and comfort of the sick, including prepared foods and special diets supplied direct from the ship's kitchen. The nurses, too, are

now trained men and are as competent and skillful as the nurses of any hospital ashore. In place of the old table and rubber sheet there is now a complete operating room, isolated from the sick bay, equipped with every modern appliance and in which it is possible to perform the most serious or the most delicate operations. The dispensary is equipped with modern conveniences, even a typewriter now being usual, and the medical supplies are not only liberal in quantity but contain such items as diphtheria and typhoid antitoxins and most of the tested and approved remedies of the modern materia medica. In brief the difference is just about the same as between the old days in the drug store when the apothecary made everything and now when everything is made for him.

The duties of the naval apothecary while still fundamentally the same, the preparation and dispensing of medicines and participation in drills, are now vastly increased over those of the old days. Not only has the advance in equipment and materials necessitated more duties, but the highly technical character of everything aboard a battleship has necessitated better training and knowledge of many more things than we old apothecaries were expected to know or do.

The old apothecary was expected to be a good apothecary, a fair penman and a man of good general intelligence, anything more than this was supplied at his own volition. He was expected to have general supervision of the nursing of the sick and was generally the surgeon's assistant during operations and attended to minor cases, applied dressing etc. In addition to all these duties the present day apothecary must have knowledge of modern hygiene and hospital practice, must be capable of performing chemical analyses, assisting in bacteriological examinations and must be thoroughly familiar with the various drills and practices incident to caring for the wounded in action made so vitally necessary by the conditions of modern warfare. Nowadays the battleship's equipment contains what is practically a complete chemical and bacteriological laboratory equipment and analyses are made in routine work of water, foods, supplies of all kinds and various materials in addition to the usual analyses of urine, faeces, etc. and bacteriological examinations are of frequent occurrence. My chief chemical work used to be testing the fresh water from the condensers to determine its potability, this depending upon whether it became turbid or not on addition of a solution of silver nitrate. There were occasional rough examinations of urine and once in a while a call for testing some article purchased ashore, and, I had almost forgotten it, so long ago has it been abandoned, a weekly testing of the air on the berth deck to determine the amount of carbon dioxide it contained. This was done by drawing air through lime water in a big bottle and then determining the amount of calcium hydroxide left, the method being capable of fairly accurate results but as usually done being more or less of a guess. Apparatus we had not except such as was used in dispensing and a few test tubes.

The present duties of the apothecary at shore stations and naval hospitals includes even more technical work than is required from him when aboard ship. In addition to having charge of the dispensary he has general supervision of the nurses and kitchens, acts as purveyor of stores, superintends the purchase of fresh meats, provisions, etc. and does the general bookkeeping of the station. He is often called on to make X-ray examinations, chemical analyses and assist in bacteriological work and at times to assist the surgeon as anaesthetist during

operations. There is now a training school for hospital stewards as well as for the nurses of the Hospital Corps, and every newly enlisted man is sent to this school as early as convenient for instruction, and is also assigned to a hospital for a time before being sent to sea. The requirements for appointment as hospital steward from civil life include a good general education as well as thorough acquaintance with the professional side, and graduation from a college of pharmacy is one of the essentials. Hospital stewards are also appointed from the ranks of the Hospital Corps, hospital apprentices these men are called, a hospital apprentice being eligible to promotion to hospital steward after two years' service in the various grades, provided that he can pass the rigid professional and general examination. This condition too is far different from olden times when favor and personal acquaintance counted far more than merit.

There is one chapter in the history of the Naval apothecary since the Civil War that cannot be passed by unnoted, that is the splendid showing the naval apothecaries made during the Spanish War in spite of being suddenly called upon to fill new and responsible positions and to perform unaccustomed duties. Of course most of us had at one time or another come in contact with conditions of actual warfare during cruises in the Far East and in Central American waters, but this duty was usually performed in company with a medical officer from the ship who would be in charge of the landing party. Personally I have had experience in several Central American revolutions and once helped establish a field hospital for the wounded in a battle fought near Bocas del Toro, Costa Rica, but I had only the responsibility for the equipment and minor operations whereas the apothecaries in many instances during the Spanish War were doctor, surgeon, apothecary and nurse all in one and had to meet emergencies unaided. At the beginning of the war there was such a shortage in the Medical Corps that it was necessary to put apothecaries on many of the smaller auxiliary vessels, tugs, colliers, etc., as medical officers, and the entire care and responsibility for the health and hygiene of the crew fell on the apothecary. Some of the men did remarkable work, such as reducing strangulated hernia, setting fractured limbs, and ligating severed blood vessels, and all but very few of them rose to the occasion and won high commendation for their diagnoses of disease and treatment of the sick and wounded under their care. Of course at times it was possible to call upon a regular medical officer when in company with larger vessels, but often for weeks the apothecary had no one to help him and had to depend upon his own skill and good judgment. The fine record made is all the more remarkable because of he fact that many of these apothecaries were green men, that is newly enlisted, and outside of their college education and drug store experience had had little training in caring for sick and wounded. The medical outfit they had was confined to the most essential drugs and surgical dressings, a book of instructions and such extra supplies as could be obtained from time to time.

Their service was all the more arduous and responsible too because of having to care for crews themselves chiefly recruits and because of the small size and character of most of the vessels and that they did so well is a splendid exhibition of the patriotism and devotion of the apothecaries who answered their country's call for service.

The life of the naval apothecary nowadays is far more comfortable and more

pleasant than in the olden days, there are few long sea trips and the vessels themselves are so well equipped in every way. Every battleship now has its cold storage rooms, and fresh meats and provisions are as common as they used to be scarce; ice is fairly plentiful and so is fresh water, trained cooks have supplanted the old "mess cook" and fresh bread is baked daily and the food supplied is better than at many boarding houses. Salt horse and hard tack are now largely curiosities and there is a howl from the crew if pie is not served them at least three times a week. In other personal comforts things have changed for the better; the ventilation is good and the sleeping quarters of the apothecary is equipped with a comfortable bunk, he has electric lights to read by and can take a shower bath whenever he wants to. Even in amusements times have changed. Our music, if we had any, was afforded by amateur talent on accordeon or banjo, but the apothecary today can listen to the latest ragtime, or play it himself, on a player piano while most of the ships have their own band. Each ship now carries an excellent library, newspapers and magazines are frequent and mails are frequent, something we oldtimers were deprived of. I could go on this way recalling contrasts and incidents for hours but I am afraid that I have already taken up too much time with reminiscences which however interesting to me may not be thought so by others, so will bring my "log" to a close. Just one more word—if the times have changed and methods with them, the naval apothecary has kept up with the Navy and the men of today are just as skilled and highly trained as those of any other branch of the service. The naval apothecary doesn't carry sails now either.

IMPORTANT DATES IN THE CHRONOLOGY OF PHARMACY.

JOHN F. LLEWELLYN, MEXICO, MO.

B. C. 3500. Is date of the oldest prescription, written on Egyptian stone, which is in the Metropolitan Museum of Art, N. Y.

B. C. 2000. Chinese knew Rhubarb, Aconite, Bark of Pomegranate, Ergot of Rye, Camphor, and Canella.

B. C. 2100. King Osimandias (Egypt) wrote above his library "The pharmacy of the soul," another rendering is "The office of remedies for diseases of the soul."

About this period pharmacy was separated from medicine in Egypt.

B. C. 1700 to 1400. There are three Egyptian papyrus, that are as much pharmacopoeias as medical treatises, one mentions fifty vegetable substances, another sixty, that were used medicinally, besides those from animals and minerals.

Ointments, clysters, and poultices are mentioned.

They appealed to the god who will "slay the slayer."

B. C. 1490 and 1000. The Bible mentions the art of the apothecary or perfumer. Moses probably had this from papyrus mentioned above, which he is supposed to have studied.

Apothecary and perfumer were one in Egypt.

B. C. 1300. Chiron, Esculapius and his two sons, this date is an average of nine estimates.

B. C. 460-327. Hippocrates.

B. C. 132-63. Mithriadates and his Mithridate or Theriac.

A. D. 50. Celsus wrote an account of the medical system of his time.

A. D. 65. Pliny wrote a materia medica.

A. D. 100. Dioscerides wrote a treatise on materia medica and edited a pharmacopoeia.

A. D. 117. In Baden near Zurich there were found Roman ruins containing medical pharmaceutical and surgical appliances, medical spoons in bone and silver, measuring vessels, jars and pots, some containing traces of ointments; the latest coins found were those of Hadrian.

A. D. 130. Galen laid the foundation for galenicals.

A. D. 650. The University of Salerno early in the seventh century taught pharmacy and the separation of medicine and pharmacy.

Nicholas Praepositus of Salerno wrote a pharmacopoeia.

Great advancement in pharmacy made at Salerno in the sixteenth century.

A. D. 750. Early in the eighth century Al Mansur established a pharmacy.

A. D. 806. Arabs produced a pharmacopoeia and established apothecary shops.

A. D. 829. Monastery of St. Gall had plans for a hospital and pharmacy.

A. D. 857. Schools of pharmacy arose in the chief Moslem cities.

Mesua became celebrated for his knowledge of drugs.

Mesua, the younger, of Damascus wrote "De Simplicis" which was used in forming the first English pharmacopoeia, 1618.

A. D. 949. Cordova made advancement in medicine greater than any since Galen.

Ibn Beytar the botanist, traveled all over the East to find medicinal herbs, on which he wrote an exhaustive treatise.

A. D. 1050. Monte Cassino, near Naples had a monastery hospital, infirmary and pharmacy.

A. D. 1145. St. Hildegarde prepared a materia medica.

A. D. 1225. St. Elizabeth of Hungary established a sisterhood to nurse the sick and had a sisterhood pharmacy.

A. D. 1241. Frederick Domkellar presented his apothecary shop to the monastery of St. Thomas.

A. D. 1250. Established a drug store, privileges protected by government in Germany and France.

A. D. 1307. In Ragusa, Dalmatia is now a San Fransiscan pharmacy established in 1307. It has the pots and vases which held the herbs and simples from earliest times.

The labels burned into the pottery yet survive.

Ragusa claims to be the birthplace of Esculapius.

A. D. 1534. The Jesuits established pharmacies in their houses.

A. D. 1535. Henry VIII amused himself making cramp rings, plasters and compounding medicines.

He left a M. S. "A Book of Plasters, Spasm Drops, Ointments, and Poultices. Devysed by the King's Majestie (and four physicians)."

A. D. 1535. A cousin of Anne Boleyn was an apothecary.

A. D. 1535. One of Cartier's crew was Francois Guileadt, "apotecaire."

A. D. 1540. The citizens of London agreed to buy for St. Bartholomew's Hospital all manner of apothecary wares and all that was necessary for making salves and all other things touching physic or surgery.

A. D. 1606. Louis Hebert, apothecary, came from France, and in 1616 returned and brought out his family.

A. D. 1613. Besler, a pharmacist of Nuremberg, published a work on botany.

A. D. 1625. Dalmahoy kept a shop on Ludgate Hill, where he sold drugs, potions, electuaries, powders, sweetmeats, wares for the complexion, scented hair oil pomades, dentifrices, love charms, Italian masks to sleep in, spermaceti salts, scammony and squills.

A. D. 1646. An apothecary of Boston obtained permission to build a paling.

A. D. 1698. An English physician reported Paris apothecary shops neat enough, if they were as well stored with medicines.

Some are finely adorned and have an air of greatness, vases of copper in niches of windows, within are mortars of brass as well for sight as use.

A. D. 1716. Douglas, an apothecary, was raised to the peerage, the wags said:

"In your arms rather quarter
A pestle and mortar
And your crest be a spruce gallipot."

A. D. 1729. Smithson, an apothecary, became a baron and son-in-law to a duke.

A. D. 1732. Thomas Harwood of Boston wrote a treatise on pharmacy.

A. D. 1785. Stark's Pharmacy, London, established, yet in business.

A. D. 1851. Organization of the American Pharmaceutical Association.

A. D. 1912. Publication of the Journal of the American Pharmaceutical Association.

A. D. 1912. Sixtieth anniversary of the A. Ph. A.

Contributed and Selected

NOTES ON CHEMICAL TESTS OF THE UNITED STATES PHARMACOPOEIA.

CARL E. SMITH, PHILADELPHIA, PA.

(Continued from page 1273.)

HYDRASTINA.—The melting point of the U. S. P. is the same as given by some authorities for the chemically pure alkaloid and medicinal specimens must be expected to vary somewhat from this figure, especially since allowance of appreciable quantities of impurities is implied by the description "white to creamy-white." The intention of the test for distinction from hydrastinine is not stated clearly enough; a solution of 0.1 gm. of hydrastine in 10 cc. of diluted sulphuric acid develops a blue fluorescence on addition of a few drops of N/10 potassium permanganate, but no fluorescence should be visible before addition of the reagent. Some authorities give a test for berberine; an aqueous solution of hydrastine (1 in 20), made with aid of a slight excess of hydrochloric acid, should not be reddened by addition of chlorine water.

HYOSCINAE HYDROBROMIDUM.—While the U. S. P. does not explicitly specify the laevorotatory modification, the melting point given practically excludes the optically inactive form. Since, however, determinations of melting points as high as 190° are notoriously untrustworthy, it may be advisable for the U. S. P. to require definite limits of optical rotation, to exclude excessive quantities of the optically inactive *i*-scopolamine. The German Pharmacopoeia directs a test for apoatropine, as follows: A mixture of 5 cc. of a 1 percent. water-solution of the salt and a drop of a water-solution of potassium permanganate (1 in 1000) should not be completely decolorized within 5 minutes. The sulphuric acid test for "carbonizable impurities" should be made with about 0.1 gm. of the salt and 1 cc. of the acid. In the test for morphine, a rather superfluous test, "any color" should be changed to "a dark red color," as an orange color is produced with the pure salt, due to liberation of bromine.

IODOFORMUM.—A test for alkalies, as well as for acids, should be made with litmus paper. Adulteration with sulphur, sometimes reported, may be detected by dissolving the sample in alcohol, in which sulphur is nearly insoluble.

IODUM.—The specific gravity is, of course, to be regarded only as a statement of one of the physical characteristics of chemically pure iodine and not as a rigid requirement, but this, as in many similar cases, should be indicated by the diction or by a general explanation in an appropriate place. Instead of the statement, "leaving no residue" a requirement of a limit of 0.1 percent. of non-volatile matter should be made. The statement under "Assay," that titration with thiosul-

phate, with the prescribed calculation of results, gives the percentage of pure iodine, is not strictly accurate, as it ignores the ever-present iodine chloride; specimens containing this impurity within allowed limits sometimes test as high as 100.5 percent. by the official method.

LIQUOR ACIDI ARSENOSI.—To allow for unavoidable slight inaccuracies in the weighing of ingredients, loss in handling, deterioration on keeping, etc., a slight variation in strength should be officially recognized. The "rubric" calls for an *inflexible* 1 percent. and the assay for a *minimum* of 1 percent. of As_2O_3. The former is, strictly speaking, a requirement of an impossibility, while the latter is an unsafe one, as it provides no *upper* limit. A requirement that the solution contain not less than 0.98 and not more than 1.01 percent of As_2O_3 would probably be acceptable to everybody concerned.

LIQUOR ARSENI ET HYDRARGYRI IODIDI.—The remarks under the preceding apply also to the arsenic and mercury contents of this preparation and official methods for their quantitative determination should be provided; additional determination of the iodine is also desirable.

LIQUOR FERRI SUBSULPHATIS.—A more reliable means for distinguishing this from the official solution of normal ferric sulphate should replace the time-honored test with sulphuric acid, which has been found misleading. The following simple test has been found more satisfactory: A mixture of 1 cc. of the solution and 40 cc. of water is heated until it begins to boil; a turbid mixture is obtained with the subsulphate, a clear solution with the tersulphate solution.

LIQUOR FORMALDEHYDI.—This solution, as found in commerce, contains a variable quantity, up to 14 percent., of methyl alcohol, the presence of which is not only unobjectionable but desirable, as it retards or prevents formation of paraformaldehyde. For this reason the specific gravity of solutions of official strength is often considerably lower than the U. S. P. limits, sometimes as low as 1.064 at 25°. The products obtainable in this market almost always contain traces of calcium sulphate, which is not allowed by the U. S. P., but to which no valid objection can be made.

LIQUOR HYDRARGYRI NITRATIS.—The percentage of mercury is determined most conveniently by titration with N/10 sulphocyanate, with ferric alum as indicator.

LIQUOR PLUMBI SUBACETATIS.—When adjusted to the required lead content by the official assay method, the specific gravity of the solution has been found to vary from 1.235 to 1.250 at 25°.

LIQUOR POTASSII ARSENITIS.—The comments under *Liquor Acidi Arsenosi* regarding the arsenic content apply here also.

LITHII BENZOAS.—In testing this and other official lithium salts for other alkalies, amyl alcohol boiling between 128° and 132° has been found as serviceable as the specified article boiling at 132°, which is not readily obtainable. For the quantitative conversion of this and other official lithium salts, sulphuric and nitric acids, as directed in the U. S. P. under *Lithium Citrate*, have been found preferable to ammonium sulphate. It is advisable also to use platinum instead of porcelain crucibles for such tests, because of the reaction of lithium carbonate with silicates at high temperature.

LITHII BROMIDUM.—The salt is not always alkaline, as stated, but is neutral when free from an excess of alkali or acid. For titration with silver nitrate it should be dried to a constant weight at 150° and no attempt should be made to weigh exactly 1 gm. of the dried salt, as it is too hygroscopic to be weighed otherwise than in a stoppered bottle. For additional comments see under *Lithii Benzoas.*

LITHII CITRAS.—A 5 percent. solution of a salt free from acid citrate is more than "faintly" alkaline to litmus. A temperature of 180° is preferable to 150° for making the salt anhydrous previous to the quantitative conversion into sulphate; at the lower temperature a constant weight cannot be reached in a reasonable length of time. For additional comments see under *Lithii Benzoas.*

LITHII SALICYLAS.—While this salt is officially required to be neutral or slightly alkaline to litmus, it is more than slightly alkaline to this indicator when free from acid salicylate. The salt of the market contains crystal-water corresponding approximately to the formula $LiC_7H_5O_3$, $\frac{1}{2}H_2O$, of which the Pharmacopoeia takes no account. It becomes anhydrous at 100° and should, therefore, be dried to a constant weight at that temperature before it is weighed for the quantitative determination as sulphate. For additional comments use under *Lithii Benzoas.*

MAGNESII CARBONAS.—The test for calcium should be made with enough ammonium oxalate to prevent precipitation of magnesium oxalate, in this case with about 5 cc. of the official test solution. Anhydrous magnesium oxide being very hygroscopic, the crucible containing the residue after ignition should be kept covered with a closely fitting lid, from the time it is taken from the desiccator until the weight has been taken. Failure to take this precaution leads to entirely incorrect results. For the same reason exactly 0.400 gm. of this residue should not be taken for titration, as directed, but the entire quantity used.

MAGNESII OXIDUM.—The official statement that this forms a gelatinous mass with 15 parts of water does not apply to the products of this market. The comments under *Magnesii Carbonas* apply also to the oxide.

MANGANI SULPHAS.—In the test for alkalies and magnesium a residue of about 0.2 percent. should be allowed. In the test for zinc, ferric compounds, present in permissible quantity, may cause precipitation of sulphur, which may be mistaken for zinc sulphide. The test is better made by adding hydrogen sulphide to the filtrate from the precipitate produced by an excess of ammonium carbonate in a water-solution of the salt previously treated with chlorine.

METHYLIS SALICYLAS.—The alkaline liquid (last paragraph) should be heated at 100° C. for at least 5 minutes, to saponify the ester, before it is diluted with water, otherwise most of the methyl salicylate will be precipitated unchanged by the hydrochloric acid.

METHYLTHIONINAE HYDROCHLORIDUM.—The U. S. P. is in error in assigning an anhydrous formula to the crystalline compound; it contains 3 molecules (=14.46 percent.) of water, of which it loses two at 100°, the remainder at 150°. The ash requirement is too stringent, as few obtainable specimens come within its limits; a maximum of 1 percent. has been proposed and can be readily met. As any zinc compounds present are likely to be reduced, at least partially, to

metal during incineration, and as zinc is volatile at comparatively low temperatures, this impurity may escape detection unless special precautions are taken. It is recommended that the test be carried out somewhat as follows: 0.5 gm. of sample is carbonized at a temperature below a red heat, in a porcelain crucible. The residue is powdered and boiled for 5 minutes with 10 cc. of diluted hydrochloric acid. The mixture is then filtered and the filter washed with 10 cc. of water. The combined liquids are boiled with 1 cc. of nitric acid, then supersaturated with ammonia water and filtered if not clear. Ammonium sulphide should produce no turbidity in the filtrate. The official test for arsenic is defective in that the proportions of potassium nitrate and sodium carbonate are not specified and in that the nitric acid is not eliminated before treatment with sulphurous acid. There seems also to be no good reason why the test should be four times as stringent as it is for most other official substances. The following is recommended to replace the present test: A powdered mixture of 0.5 gm. of sample and 1 gm. each of potassium nitrate and dried sodium carbonate is heated in a crucible until the organic matter is completely oxidized. The cooled residue is dissolved in 10 cc. of diluted sulphuric acid and the solution evaporated over a flame until sulphuric acid begins to vaporize. The residue should not respond to the Modified Gutzeit's Test (U. S. P. VIII). Adulteration with dextrin has been noted by J. M. Francis and C. E. Vanderkleed. It may be detected by its insolubility in alcohol; the amount of insoluble residue, obtained by boiling about 1 gm. of methylene blue with 50 cc. of alcohol, washing on a filter with 50 cc. of hot alcohol, and drying at 100°, might be limited to 1 percent.

MORPHINA.—A definite melting point cannot be stipulated, as the alkaloid decomposes below the melting temperature and then melts at temperatures varying with the rate of heating and other conditions. Residues on incineration should not exceed 0.05 percent.

MORPHINAE ACETAS.—It has more than a "faint" odor of acetic acid, owing to gradual spontaneous decomposition. Residues on incineration should not exceed 0.05 percent. The precipitate produced by ammonia water is nearly white only in case of a freshly made salt; older products yield buff-colored to light brown precipitates. The same applies to the color of solutions of the salt in aqueous caustic alkali. Because of its instability this salt cannot be expected to meet the U. S. P. requirements as to color and solubility, except when freshly made. Rapid deterioration and the generally conceded fact that it serves no purpose that is not served better by one of the other official morphine salts, make it desirable that the use of the acetate be stopped. Among 12 of the most important foreign pharmacopoeias only the British recognizes it. The Belgian, German, and Swiss pharmacopoeias either direct or permit substitution of the hydrochloride when the acetate is ordered.

MORPHINAE HYDROCHLORIDUM.—The following tests should be added. A water-solution of the salt (1 in 50), should not be rendered turbid by diluted sulphuric acid (barium) nor, when acidulated with hydrochloric acid, by barium chloride (sulphates).

PARAFFINUM.—The requirement that "its alcoholic solution should not redden moistened blue litmus paper" conflicts somewhat with the statement in the pre-

ceding paragraph that paraffin is insoluble in alcohol. The test is preferably made by shaking melted paraffin with an equal volume of hot water and testing the latter with litmus.

PARALDEHYDUM.—The chief impurities in this are acetaldehyde and, according to R. Richter, metaldehyde. Excessive quantities of these are shown by abnormal freezing and boiling points. The official statements that paraldehyde solidifies "when cooled to near O°C," and "becomes liquid again at 10.5° C," may occasion rejection of the best products of the market. The German Pharmacopoeia states that paraldehyde containing about 4 percent. of acetaldehyde congeals at 6° to 7°, but gives no melting point. The experience of this laboratory is that specimens which have approximately the official boiling point congeal at practically the same temperatures at which they melt, usually 8° or 9° C. The melting point 10.5° of the U. S. P. is a figure given by some authorities for the chemically pure substance and is not likely to be reached by medicinal products. The official figures should probably be changed to a requirement that the congealing point be not lower than 6°. The melting point is superfluous as a test of purity. The specific gravities of specimens of good quality tested of late ranged from 0.9910 to 0.9928 at 25°, all of them being higher than the official figures. It is recommended that the specific gravity be given as "about 0.992 at 25°," but not required as a test of purity.

PELLETIERINAE TANNAS.—The products of the market differ more or less from the preparation described in the U. S. P. They are usually incompletely soluble in water and in alcohol and the prescribed color tests are inadequate, as the reactions are obscured by the tannin or other organic matter. On extraction of the alkaloids by shaking with chloroform and caustic alkali solution, acidulating the chloroform extracts with hydrochloric acid, then evaporating and drying, residues of 17 to 20 percent. of alkaloid chlorides have been obtained. These residues responded readily to the selenous acid test and produced only light yellow colors with sulphuric or nitric acid.

PHENOL.—The required minimum contents of actual phenol might be raised to 98 percent., as that strength, rather than 96 percent., corresponds to the official congealing point limits of 39°. Determination of the congealing point is one of the most important of the tests; it makes a quantitative determination of phenol, as well as the glycerin test and a boiling point determination practically superfluous. The stated solubility in water is wrong; it should be about "12" instead of "19.6" parts.

PHENOL LIQUEFACTUM.—Products obtained by the official method contain at least 88 and may contain up to 90 percent. of actual phenol; some such range would be preferable to the present minimum of 86.4 percent. The official congealing point, 13.5°, corresponds to about 88 percent. of phenol. In connection with the boiling point, "188°" should be changed to "182°."

PHENYLIS SALICYLAS.—The melting point is an important test of purity, but the rigid figure 42° should give way to a range of about 41° to 43°, within which limits the melting interval should be required to fall.

PHOSPHORUS.—Specific gravity and melting point are not required either for identification or as criteria of purity and as these constants, as given in the U. S.

P., are those of entirely pure phosphorus, they are inapplicable to medicinal-commercial products and can be considered merely as informative statements, not as requirements. Phosphorus is not as soluble in chloroform as officially stated, but requires about 40 parts of the solvent.

PHYSOSTIGMINAE SALICYLAS.—Determination of the melting point is too uncertain in its results, because of partial decomposition, to be of much value as a test of purity. The salt is officially described as having an acid reaction to litmus, but this is not always true of the market product, which is sometimes neutral. Because of its use in eye-drops, more than traces of acid are probably objectionable and it might be well if it were required to be neutral or not more than faintly acid to litmus paper when tested in a cold-saturated water-solution. For distinguishing this salt from the sulphate, the indirect test with platinic chloride is inconclusive and unreliable; it is sufficiently well identified as a salicylate by the ferric chloride test and presence of sulphate is more conclusively shown with barium chloride.

PHYSOSTIGMINAE SULPHAS.—Remarks under the preceding apply also to this salt. The test for excessive acidity should be made in a 1-20 solution. The statement that this salt "yields only a faint yellow color" with sulphuric acid is correct only when the proportion of the former is exceedingly small, but as a test for easily carbonizable impurities a solution of 0.1 gm. in 2 cc. of the acid should not become darker than yellow within 5 minutes.

PILOCARPINAE HYDROCHLORIDUM.—Different authorities give melting points ranging from 193° to 205°; variations of 195° to 198° have been noted in this laboratory. This uncertainty about the melting point lessens its value as a test for excessive contamination with other Pilocarpus alkaloids or decomposition products. Determination of optical rotation may prove more satisfactory; the French Pharmacopoeia states that the specific rotatory power is $^{a}D_{18}^{\circ}=+91^{\circ}$, when determined in a water-solution containing 2 gm. of the salt in 100 cc.

PILOCARPINAE NITRAS.—To exclude excessive quantities of other Pilocarpus alkaloids, etc., the *British Pharmaceutical Codex* proposes that the melting point should not be lower than 172° C. The pure salt is generally considered to melt at 177° to 178°. Specific rotatory power according to the French Pharmacopoeia, is $^{a}D_{18}^{\circ}=82.2^{\circ}$.

PLUMBI ACETAS.—Market products do not conform strictly to the official specifications, being sufficiently basic to cause them to contain less than the required minimum of 99.5 percent. of the crystallized normal salt. A. Seidell found the lead in a number of samples to correspond to 101.6 to 106.1 percent. of $Pb(C_2H_3O_2)_2.\ 3H_2O$. A strictly normal salt would not be acceptable to the drug trade because of its strong odor of acetic acid and its instability. However, this varying basicity should be kept within reasonable limits and it is therefore recommended that the salt should contain a quantity of lead corresponding to not less than 99.5 nor more than 105 percent. of $Pb(C_2H_3O_2)_2.\ 3H_2O$. Solutions (1 in 20) in water are usually more than "slightly" alkaline to litmus. The allowable limits of foreign metals, etc. should be more clearly defined than by terms like "slight precipitate" and "slight residue."

POTASSII ACETAS.—The salt must be dried for at least 2 hours at 150° to render it anhydrous before assaying. In determinations of the type involved in the assay of this salt, the washings of the charred mass should be tested for alkalinity with litmus or phenolphthalein, not with methyl-orange as directed. This error occurs also in connection with the assays of other official alkali salts of organic acids. It is also advisable to boil the mass with water for 15 minutes or longer to facilitate extraction, preferably in platinum, as all except the most resistant glass may increase the alkalinity of the liquid sufficiently to introduce a serious error. An alternative method, which has been found satisfactory in this laboratory, consists in boiling the charred mass with an excess of volumetric sulphuric acid, filtering, washing and titrating the excess of acid.

POTASSII BICARBONAS.—The stated percentage of loss in weight at red heat and the statement that concentrated solutions in water are neutral to phenolphthalein are not to be understood as specifications for the medicinal salt, but merely as characteristics of the chemically pure substance.

POTASSII BITARTRAS.—A minimum standard of 99 percent. is unnecessarily low, and might be raised to 99.5 percent., the commercial product being frequently 99.9 percent. pure. For the test for alum and phosphates the mixture with potassium carbonate and nitrate should not be heated in a porcelain crucible, as officially directed, but in platinum. An assay is made more conveniently than by the official method, and with less risk of error by direct titration of a water-solution of 0.8 to 0.9 gm. of the salt with N/10 alkali with phenoplhthalein as indicator.

POTASSII BROMIDUM.—The product of representative manufacturers is now at least 98.5 percent. pure, the chief impurity being potassium chloride, and the standard could be raised to that figure. The indirect quantitative determination of the mixed bromide and chloride by titration with silver nitrate is liable to be rendered grossly inaccurate by potassium sulphate, which may be present in considerable quantity in a carelessly made salt and for which no test is now required; not more than slight traces of sulphate should be allowed. It would also be a simple matter for unscrupulous persons to add to a product containing an excessive amount of chloride enough potassium sulphate to bring the amount of silver nitrate required for precipitation within the specified limits. Such mixtures would stand the other official tests also.

POTASSII CARBONAS.—To remove water completely in a reasonable length of time, a temperature of 150° to 160° is required.

POTASSII CHLORAS.—The impurities in this salt, as found in the market, are usually present only in traces. Quantitative determinations are therefore superfluous, as a rule, and the present standard of 99 percent. can be raised to 99.5 percent.

POTASSII CITRAS.—See comments under *Potassii Acetas* concerning the assay.

POTASSII CYANIDUM.—Potassium cyanide of U. S. P. standard is practically unobtainable. Sodium cyanide and mixtures of sodium and potassium cyanides containing the amount of cyanogen required in the official salt, however, are available.

POTASSII HYPOPHOSPHIS.—A new method, by Rupp and Kroll, for the determination of hypophosphorous acid in calcium hypophosphite, recently published (Archiv d. Pharm., v. 249, pp. 493-7), is likely to prove more reliable and convenient than any other known at this time for the assay of most of the official hypophosphites. It consists in oxidation with an excess of Koppeschaar's solution according to the equation: $H_3PO_2+4Br+2H_2O=H_3PO_4+4HBr$. The procedure is like that for the determination of phenol. The accuracy of the method has been verified by at least one investigator, who makes the only objection that phosphites, if present, raise the result. The amount of this impurity in a purified salt, however, is not likely to be sufficient to exert an appreciable influence on the results. No tests for phosphites in hypophosphites are given in the U. S. P. That of the German Pharmacopoeia for phosphite and phosphate, requiring that a water-solution (1+19) of calcium hypophosphite, acidulated with acetic acid, should not be rendered turbid at once by lead acetate, is applicable also to the alkali hypophosphites.

POTASSII IODIDUM.—The official method of titration of iodides is not satisfactory, as it requires considerable practice to obtain accurate results, because of uncertainty of the end point; more reliable results have been obtained with Volhard's method. A test for sulphates should be added, as these may be present in a carelessly made salt and cause the percentage of actual potassium iodide, as determined by titration with silver nitrate, to appear higher than it is, provided the salt also contains the usual amount of potassium chloride. For the titration, samples should be powdered and dried a few hours at 100° to 110° C. before weighing.

POTASSII NITRAS.—If a dried specimen of this salt, containing not more than 3 percent. of moisture, shows presence of less than 1 percent. of potassium chloride by titration with silver nitrate and of not more than traces of sodium by the flame test, and in addition stands the U. S. P. tests for impurities, it may safely be considered to comply with the minimum standard of 99 percent. If more than a trace of sodium be found, a determination of potassium would logically be required and in doubtful cases also a determination of nitric acid, to settle the question. A melting point of exactly 353° should not be regarded as a requirement. Authorities are by no means unanimous about the melting point of the chemically pure salt, much less about a salt containing up to 1 percent. of impurities.

POTASSII PERMANGANAS.—The directions fail to state, in connection with the assay, that the mixture should be warmed until clear and colorless before determination of the excess of oxalic acid.

PYROGALLOL.—It is recommmended that in place of the present melting point a melting interval, with limits from 130° to 133,° be required and that presence of not more than 0.05 percent. of non-volatile matter be allowed. While it is possible to make solutions so weak that they will comply literally with the specification that "the freshly prepared aqueous solution is neutral to litmus paper and colorless," a common sense construction of the statement would require that a solution of the strength most generally used for U. S. P. tests of purity, namely 5 percent., be examined. Solutions of this strength, of the best obtainable pro-

ducts, in freshly boiled and cooled distilled water, are invariably slightly acid and yellowish, the depth of color, of course, varying with the bulk examined. The specifications should be changed accordingly.

PYROXYLINUM.—A limit of 0.2 to 0.3 percent. of mineral impurities should be allowed and it is important that a test for acids be added. A test to limit moisture has been suggested to be desirable.

QUININA.—The melting points of quinine and its compounds of medicinal purity must necessarily vary within rather wide limits, since varying amounts of cinchonidine, hydroquinine, etc., are always present. As these constants are not needed for establishing identity or purity, they should either be omitted or stated to apply to the chemically pure substances only. The thalleoquin reaction cannot be obtained by following the official directions, the amount of bromine being entirely too large; not more than 1 or 2 drops of the official test solution should be used. The details of this test have apparently been adjusted as a result of trials with bromine water that had lost the greater part of its bromine. Such deterioration is almost certain with bromine water made by the official directions. It is preferable, if it is to be kept for any length of time, to make the solution with an excess of bromine, so that the water will always be nearly saturated with bromine regardless of loss by evaporation or chemical change. Solubility of quinine in a mixture of absolute alcohol and ether is incapable of showing "absence" of cinchonine and cinchonidine, moreover, presence of a limited amount of other Cinchona alkaloids, chief of which is cinchonidine, is allowed by another test. The color of the solution obtained in the sulphuric acid test for readily carbonizable matter is affected by the relative and absolute quantities of quinine and of the acid taken; a solution of 0.1 gm. of quinine in 2 cc. of sulphuric acid should not be darker than light yellow. In the test for ammonium compounds the quantity of reagent is given but not that of the quinine; mere traces of ammonium salts are legitimate, unobjectionable impurities and if more than 0.2 gm. of quinine is taken for the test, it is unnecessarily severe. Quinine should not yield more than 0.1 percent. of ash. As regards the ammonia test for other Cinchona alkaloids, the inconsistency of disregarding the proportion of alkaloid in the several official quinine compounds has been pointed out by A. B. Prescott, A. B. Lyons, and others. To remedy this defect, it would seem best to leave the test unchanged in the form it is now given under *Quininae Sulphas*, but in every other case direct to take such an amount of the compound in question as will contain the same weight of alkaloid as does 1.8 gm. of quinine sulphate that has been dried at 50° and then contains 2 molecules of water. In case of quinine, 1.74 gm. of the trihydrate would be the amount required, instead of 2 gm., weighed after drying at 50° for 2 hours. The directions for indiscriminate drying at 50° of various quinine compounds for this test are without any good reason so far discovered; this procedure makes still more disproportionate the relative stringency of the test as applied to the several compounds. As the test is based on results with quinine sulphate having a neutral or only slightly alkaline reaction to litmus, the use of hematoxylin as indicator for the neutralization of quinine is questionable, since there is evidence that the neutral points obtained with this indicator and with litmus do not coincide. Litmus solution properly made from ma-

terial of good quality is sufficiently sensitive, if the alcohol-solution of quinine is diluted with about twice its volume of water, but neither litmus nor hematoxylin is sensitive enough in strongly alcoholic mixtures for accurate neutralization of most alkaloids. It is recommended to change the official test as follows: Dissolve 1.74 gm. of quinine in 20 cc. of alcohol, dilute the solution with 50 cc. of hot water and neutralize it with normal sulphuric acid, using litmus T. S. as indicator. Evaporate the liquid to dryness in a porcelain dish on a water-bath, powder the residue, and mix it in a test-tube with 20 cc. of water. Complete the test as directed under *Quininae Sulphas.*

QUININAE BISULPHAS.—In view of the fact, which has been recognized by the Italian Pharmacopoeia, that the solubility of quinine sulphate in water is influenced by the presence of metallic salts, such as sodium sulphate, chloride, etc., it is advisable to avoid introduction of such salts in the application of the ammonia test for other Cinchona alkaloids to quinine compounds; it is preferable to separate the free alkaloids by a shaking-out process, then proceed as recommended above under *Quinina.* In place of 2 gm. of a salt that has been dried for 2 hours at 50°, 2.52 gm. of the crystallized salt should be taken for this test. For further comments see under *Quinina.*

QUININAE HYDROBROMIDUM.—In the nitric acid test for morphine, an orange color is produced, due to liberation of bromine, but no deep red color, fading to orange, should be noticeable. As barium salts are used by manufacturers to remove sulphates from the salt, addition of a few drops of diluted sulphuric acid to 10 cc. of a hot water-solution (1 in 50) of the salt should cause no turbidity. In place of 3 gm. of a salt that has been dried for two hours at 50°, 2.93 gm. of the crystallized salt should be taken for the test for other Cinchona alkaloids, if 30 cc. of water are to be taken for the final maceration, or two-thirds of that quantity if 20 cc. of water are to be used. For further comments see under *Quinina* and *Quininae Bisulphas.*

QUININAE HYDROCHLORIDUM.—A test for barium should be added for reasons stated under *Quininae Hydrobromidum.* In place of 3 gm. of a salt that has been dried for 2 hours at 50°, 2.75 gm. of the crystallized salt should be taken for the test for other Cinchona alkaloids, if 30 cc. of water are to be taken for the final maceration, or two-thirds of that quantity if 20 cc. of water are to be taken. For further comments see under *Quinina* and *Quininae Bisulphas.*

QUININAE SALICYLAS.—The figures of the U. S. P. for solubility in water and alcohol are incorrect; A. Seidell found the salt soluble in about 1500 parts water and in about 21 parts of alcohol. The formula of the salt as found in the market is not as given in the U. S. P. but is $C_{20}H_{24}O_2N_2 . C_7H_6O_3 . H_2O$, which corresponds to 3. 78 percent. of crystal-water; the limit of loss at 100°, therefore, is placed more properly at about 4, rather than 2 percent. Tests for absence of more than traces of chlorides and sulphates might be added to advantage. In place of 2 gm., 2.21 gm. of the salt should be taken for the test for other Cinchona alkaloids, about 5 cc. of ammonia water should be used in the shaking-out process, and the alcohol-solution of alkaloids should be diluted with about 50 cc. of hot water, to render the indicator (litmus solution) more sensitive. For further comments see under *Quinina.*

QUININAE SULPHAS.—Solutions in water are usually slightly alkaline to litmus. It is advisable, in making the test for other cinchona alkaloids, to choose a water-bath of considerable size for the macerations, so that an even temperature can be maintained more readily. There is no reason for deviating 1 or 2 degrees from the specified temperatures and the portion of the official text allowing this is better omitted, as it is likely to lead to careless manipulation. For further comments see under *Quinina.*

(To be continued.)

INTERNATIONAL STANDARDS FOR COLORED FLUIDS.*

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Introduction: That the color of certain fluids is a distinct factor in pure chemistry is evident from the employment of such colorimetric tests as that of Wessler, and when we turn to applied chemistry, we find the color of liquid products of such esthetic influence to the consumer as to be of vital commercial value to the manufacturer. This is the philosophy of use of coloring agents in pharmacy and furthermore explains the call for uniformity in the tint of natural colored products. So it is that manufacturers of oils, beer and whiskey seek uniformity in color of their products by the use of colorimeters; that is why Professor Felix Ehrlich (Zeitschrift Ver. Zuckerind 59) (1909) (746) has advocated internationional standardization of caramel by use of the definite brown substance, *Saccharan,* which he prepared from sugar. Professor Ehrlich's effort to establish an international standard for caramel is the partial expression of a still broader need of international uniformity of colors, this need being fittingly expressed by Hans Moeller at the International Pharmaceutical Congress of 1910 (Berichte der Deutschen Pharmazeutischen Gesellschaft, 10, 1910, 358), as follows:

"Ein neues Gebiet, auf dem—meiner Meinung nach—jetzt internationale Regeln fest gesetz werden solten is zweifelsohn das der exakten Farben bestimmungen."

The subject was brought to the writer in his capacity as member of the Committee on Revision of the National Formulary, there being entrusted to a subcommittee of which he was a member, the problem of standardizing tincture of caramel (Saccharum ustum) and tincture of cudbear (Persionis) which is proposed to recognize in the forthcoming edition of that work. It is needless to repeat the numerous and practically fruitless efforts toward standardization already reported by the writer (American Druggist 59, 1912, 35) except to say that while some of the plans tried out were satisfactory, each possessed the in-

*Read before the Eighth International Congress of Applied Chemistry, Section of Pharmaceutical Chemistry.

superable objections of uncertainty of strength or instability of tint. So it was that such standards for cudbear as stained glass, alkaline phenolphtalein solution and solution of commercial orcein, and such for caramel as amber glass and carefully prepared burnt sugar solution were abandoned and after experimentation with tintometers, the following simple, accurate and inexpensive method was devised.

Suggested Basis of Standardization: From the Lovibond tintometer with its blendings of red, yellow and blue glass slides, it was a simple step to the mixing of standard and stable, red, yellow and blue solutions and the chemical solutions adopted, because of stability and comparative ease of standarization were slightly acidulated solutions of cobalt chloride, ferric chloride and cupric sulphate. Since starting the work, examination of the literature has shown that Hazen (American Chemical Journal 14, 1892, 300), prepared diluted water-testing solutions from potasso-platinic chloride and cobalt chloride and that Crookes, Odling and Tidy (Chemical News 34, 1881, 174), used for similar water-testing purposes a ferric chloride-cobalt chloride solution in conjunction with a cupric sulphate solution, the two solutions operated in two wedge-shaped flasks. But in both of these plans empiric solutions were employed and for the limited scope of matching colors of water samples, whereas the investigation here recorded, standardized volumetric solutions were used and the wide range of hues here exhibited are produced.

Operation: For the blending, half-normal volumetric solutions based on the atomic weights of 1912 were employed.

Standard Red contains 14.74 gm. cobalt to the liter.

Standard Yellow contains 9.308 gm. ferric iron to the liter.

Standard Blue contains 15.8925 gm. copper to the liter.

Three sets of these standard red, yellow and blue solutions have thus far been prepared. The first set was unacidulated and empirically prepared by dissolving the exact molecular proportion of C. P. crystalline chemicals, ferric alum, cobalt chloride and cupric sulphate in water to a half-normal solution; but as the iron solution either alone or in combination with the cobalt or copper solution precipitated after standing a few weeks, slight acidulation was necessary to secure permanent solutions and to aid uniformity, all the colored solutions were subsequently prepared with a fluid consisting of 25 cc. of 31% hydrochloric acid and 975 cc. of water; while for the iron solution, ferric chloride was substituted for ferric alum.

While the addition of the small amount of acid did not affect the tint of the cobalt or copper solution, it of course changed materially the color of the ferric solution, and hence the blends of the three solutions. In passing, it might be said that the blending of neutral solutions strongly pointed to the interesting fact that *equal volumes of equimolecular solutions of ferric iron, copper and cobalt, give a practically colorless fluid corresponding closely with the "neutral tint" of Lovibond.* (Measurement of Light and Color Sensations, p. 32.)

As will be noted below when acid is added to the three solutions, the color preponderance is so affected that the neutral gray tint is found in a blending of red 5, yellow 2, and blue 5, the mixture of equal parts of the three solutions being distinctly yellow. The other two sets of red, yellow and blue solutions were made strictly half-normal as per specifications given below.

Red: 59.4965 gm. $CoCl_26H_2O$ diluted to 1000 cc. with a mixture of 25 cc. 31% HCl and 975 cc. water.

Yellow: 45.054 gm. $FeCl_36H_2O$ diluted to 1000 cc. with a mixture of 25 cc. 31% HCl and 975 cc. water.

Blue: 62.43 gm. $CuSO_45H_2O$ diluted to 1000 cc. with a mixture of 25 cc. 31% HCl and 975 cc. water.

Of course, the original solutions were prepared from larger amounts of the three salts and were then diluted to the above specified half-normal strength with acidulated water; new assays being made after each dilution until exact strength was attained. The iron solution was standardized volumetrically by the potassium iodide-thio-sulphate method, while the copper and cobalt solutions were assayed gravimetrically. Analytical data as to these assays will be published later in a more extended report on this line of investigation.

One of these sets of assayed solutions was prepared from Kaulbaum's C. P. "Analyse" copper sulphate; Kaulbaum's C. P. "Nickel-frei" cobalt chloride and Merck's "Reagent" ferric chloride; while the other set, equally carefully assayed, was prepared from the usual C. P. chemicals as found in stock, the idea being to see if trifling deviations from absolute purity would seriously affect the tint of the mixed solutions. Comparison of products of combinations of these two sets of red, yellow and green fluids and that as "unknowns" showed no deviation save in one isolated case out of the 88 hues tried and this, very likely, was due to some error in mixing.

The Mixing: The production of the 88 hues mentioned above from the standard red, yellow and blue solutions was the result of mixing all possible combinations of the three fluids that would lead to a finished volume of 12 cc. when each fluid was used only in cubic centimeter amounts; that is, when fractional parts of the cubic centimeter were not selected. As a full list of these 88 blendings is given below, we need here only mention that the 88 series of combinations of these fluids to make 12 cc. was empirically chosen as a convenient number and that it goes without saying that an indefinite number of hues are possible, if larger volumes are prepared or fractional parts of the cubic centimeter are used as basis of mixing. It might also be added that in the 88 hues, the combinations of any two of the three colors are included. The result of these 88 blends are exhibited with this and show a range of hues covering the entire spectrum from the red of cobalt chloride solution to the blue of copper sulphate solution. This, of course, eliminates the cardinal reds and crimsons and the azures and navy blues. A number of the hues, it will be noted, are of a neutral tint, due undoubtedly to the absorption of the light ray by the chemicals, under certain con-

ditions of blending. These "neutrals" will be the subject of further study on physical lines.

For convenience sake, the 88 hues have been classified by eye into the following tentative groupings:

THE R. Y. B. HUES.

(In this tabulation "R" means ½ N—$CoCl_26H_2O$; "Y" means ½ N—$FeCl_36H_2O$, and "B" means ½ N—$CuSO_45H_2O$; while in the order from top to bottom of the columns the sequence of the solar spectrum is followed. The interrogation point after some of the blendings means a hue which does not fit satisfactorily into the sequence and which, however, is not "gray" enough to place among the neutral tints.)

Red Orange Group.		
R.	Y.	B.
11	1	0
10	2	0
9	3	0
9	2	1
8	4	0
8	3	1
7	5	0
7	4	1
6	6	0
6	5	1
6	4	2
7	3	2
5	7	0
5	6	1

Yellow Group.		
R.	Y.	B.
5	5	2
4	7	1
3	9	0
4	8	0
3	8	1
2	10	0
1	11	0
Green Yellow Group.		
3	7	2
2	9	1
1	10	1
3	6	3
2	8	2
Yellow Green Group.		
2	7	3
1	9	2
0	11	1
2	6	4
3	5	4 ?
3	4	5
3	3	6

Green Group.		
R.	Y.	B.
1	8	3
0	10	2
2	5	5 ?
1	7	4
0	9	3
0	8	4
1	6	5
0	7	5
1	5	6
2	4	6
2	3	7
0	6	6
1	4	7
1	3	8
0	5	7
0	3	9
0	2	10

Blue Green Group.		
R.	Y.	B.
0	4	8
1	2	9
3	2	7 ?
3	1	8 ?
2	1	9 ?
2	2	8 ?
1	1	10
0	1	11
Blue Violet Group.		
1	0	11
2	0	10
3	0	9
4	0	8
5	0	7
6	0	6
7	0	5
8	0	4
9	0	3
10	0	2
11	0	1

Neutral Group.		
R.	Y.	B.
(Reddish)		
10	1	1
9	1	2
8	2	2
7	2	3
8	1	3
7	1	4
6	1	5
(Yellowish)		
6	2	4
6	3	3
5	4	3
4	6	2
5	3	4
4	5	3
(Greenish)		
4	4	4
4	3	5
4	2	6
(Grayish)		
5	2	5
5	1	6
(Bluish)		
4	1	7

Using the Hues: It will be seen from the foregoing table that the 88 combinations afford an excellent range of tints covering most of those required in pharmacy and commerce. The investigation has not, as yet, sufficiently progressed to report an extended line of color values and in this paper mention will only be made of the matching of the two colors entrusted to the writer by the National Formulary Committee.

Before discussing the individual matchings, it might be well to say that the writer has found that a very satisfactory way to match colored fluids is by use of those oblong flint glass prescription bottles known in American commerce as "Tall Blakes," but Nessler tubes give excellent results and for very accurate work the Rowntree Garachty colorimeter is best. Details of this phase of the matter are found in a paper in the (Practical Druggist, 30, 1912, 24).

As to caramel, a typical solution made by carefully carmelizing 1 gm. cane sugar and diluting to 500 cc. was found by two observers to match exactly the half-normal standard solution "R. Y. B. 4-7-1." As to cudbear, a purified extract (made by percolation of the drug with acetone after previous extraction with chloroform) was dissolved in alcohol containing a trace of ammonia and then diluted with water. The purple tint of this dilution did not match any of the "R. Y. B." samples but when the dilution was faintly acidulated with citric acid, similar tints were obtained; although the acidulated cudbear dilution was a trifle more transparent. Since there was some variation, the cudbear dilution and the "R. Y. B." hues were submitted to five observers as "unknowns" and the reports of these observers are tabulated below in sequence from darkest to

lightest. The "R. Y. B." fluids were the assayed half-normal blends, "a" and "b" being the two different samples described above. Two cudbear dilutions 1-50,000 were employed; one being distinctly acid (a), and the other just past the neutral point (b), the intention being to see if difference in degree of acidity would make a difference in tint.

MATCHING CUDBEAR DILUTIONS WITH "R. Y. B." HUES.

I and II

a. "R. Y. B. 9-0-3"
a. "R. Y. B. 10-0-2"
b. "R. Y. B. 10-0-2"
Cudbear dilution 1-50,000 "b"
" " 1-50,000 "a"
" " 1-60,000
" " 1-75,000

III

a. "R. Y. B. 9-0-3"
b. "R. Y. B. 10-0-2"
a. "R. Y. B. 10-0-2"
Cudbear dilution 1-50,000 "b"
" " 1-50,000 "a"
" " 1,60,000
" " 1-75,000

IV

a. "R. Y. B. 9-0-3"
Cudbear 1-50,000 "b"
b. "R. Y. B. 10-0-2"
Cudbear 1-50,000 "a"
a. "R. Y. B. 10-0-2"
Cudbear 1-60,000
" 1-75,000

X

a. "R. Y. B. 9-0-3"
Cudbear 1-50,000 "a"
b. "R. Y. B. 10-0-2"
a. "R. Y. B. 10-0-2"
Cudbear 1-50,000 "b"
" 1-60,000
" 1-75,000

From these five reports, one is justified in reporting that the dilution of 1 to 50,000 of that particular extract of cudbear matched the hue produced by blending 10 volumes of half-normal cobalt solution and 2 volumes half-normal copper solution.

General Remarks: From the foregoing paragraphs it will be seen that the writer has adopted a nomenclature for the hues covered by the cobalt-ferric iron-copper blends; "R. Y. B. 10-1-1" meaning that proportion of the three half-normal colored fluids. This nomenclature is purely tentative and as further experimentation may show the advisability of using other ionic colors, it might be well, in the beginning to call the above cited combination "Co-Fe-Cu 10-1-1."

Soon after beginning the work, platinic chloride was tried out as the yellow fluid and there was prepared a carefully standardized solution which when based on the quadrivalent platinum cation was exactly fifth-normal (9.76 gm. pt. to liter). Blending this with fifth-normal solutions of cobalt chloride and of cupric sulphate showed that the platinic chloride had much more color than did the cobalt and copper solutions; two blends of 1 volume of platinum and 11 volumes of copper solution giving the normal green that is shown in the iron-copper blend, 1-5-6.

The pink manganese solutions (chloride and sulphate) were considered, but the prepared half-normal solutions were too light to be of service.

In conclusion, the writer wishes to admit that his plan is still in the experimental stage and in its present state has its limitations. While the demonstrated samples show a fine range of orange and green tints, it is weak in reds and blues. But in his opinion, the plan is the only one by which after more extended work, the color standard problem will be eventually solved, possibly by construction of a red-yellow-blue series of anions.

CODEINE IN COMMERCIAL MORPHINE SULPHATE.*

J. B. WILLIAMS, B. SC.

During the course of an examination of some tablets of morphine and atropine sulphates, about eight months ago, the amount of alkaloid other than morphine found greatly exceeded the amount of atropine supposed to be present. This naturally led to the conclusion that either some of the morphine extracted with the atropine, or else some other alkaloid was present. The latter proved to be the case, as is shown by the extraction of tablets of morphine sulphate containing no atropine, codeine being the other alkaloid found.

This led to the examination of a number of tablets and samples of morphine sulphate made by leading pharmaceutical houses and manufacturers, and in every case codeine was found to be present in considerable quantities.

Samples were obtained from five large manufacturers of morphine sulphate, and tested for codeine with the following results:

Sample.	Percentage Codeine Sulphate found.
No. 1.	1.9 per cent.
No. 2.	.9 per cent.
No. 3.	3.6 per cent.
No. 4.	2.2 per cent.
No. 5.	7.0 per cent.

Samples of morphine sulphate tablets made by leading pharmaceutical manufacturers were also obtained and tested for codeine:

Sample.	Percentage Codeine Sulphate found.
No. 1. 1/4 gr.	2.5 per cent.
No. 2. 1/8 gr.	6.5 per cent.
No. 3. 1/4 gr.	3.1 per cent.
No. 4. 1/4 gr.	2.5 per cent.
No. 5. 1/4 gr.	2.9 per cent.

The method used for determining the codeine was as follows: Dissolve 0.5-1.0 gram of morphine sulphate, or an equivalent number of tablets in a small amount of water (15-20 cc.) and add a solution of sodium or potassium hydrate until the precipitate first formed is redissolved (3-4 cc. 5 per cent NaOH). Shake out with three or four 20 cc. portions of chloroform. Wash the combined chloroform extractions in another separator with 10 cc. water made slightly alkaline with sodium or potassium hydrates. Draw off the chloroform, filtering through cotton well wet with chloroform, into a beaker or flask, and wash the separator with two 10 cc. portions of chloroform, passing the washings through the filter into the flask. Evaporate the chloroform, dissolve the residue in excess of N/10

*Reprinted from Am. Journ. Pharm., Sept., 1912, p. 391.

acid, and titrate back with N/50 alkali, using cochineal as indicator. Each cc. of N/10 acid neutralized by the alkaloid corresponds to 0.0315 gram (0.031483 gram) of codeine alkaloid or 0.039 gram of codeine sulphate U. S. P.

That all of the codeine and practically none of the morphine is extracted by this method was proved in several cases by repeating the extraction of the aqueous residue containing the morphine. The N/50 alkali required in the titration being in every case within 0.1 cc. of the amount required to neutralize the N/10 acid used.

The presence of 0.9 percent. to 7 percent. of codeine in the morphine sulphate being consumed in the United States at the present time is certainly very surprising. This condition of affairs is to be directly attributed to the lack of any test in the United States Pharmacopœia which will show the presence of several percent. of codeine in morphine sulphate. It is a condition of affairs arising from the lack of any test which would show the purity of the product, and not from any desire to market a sophisticated product, this being evident because codeine is a more valuable product, commercially, than morphine, and is readily separated from the latter. Manufacturers would certainly not allow the codeine to remain in their morphine sulphate at a loss to themselves, and at the expense of an inferior product.

In the manufacture of morphine sulphate the morphine is usually precipitated as the alkaloid from a large volume of water, enough to hold in solution several times the amount of codeine present. Some experiments showed that it was not possible to completely separate codeine from morphine in this way, and that part of the codeine is apparently carried down with the crystals of morphine, perhaps being isomorphous with the latter.

In order to avoid the presence of codeine in morphine sulphate in the future, the next edition of the United States Pharmacopœia should include a quantitative test for codeine in morphine. The test outlined above or some suitable modification of this test is suggested. A limit of 1 percent. or 1.5 percent. should also be established as the maximum amount of codeine allowable in morphine sulphate.

ANALYTICAL DEPARTMENT, PARKE, DAVIS & CO., Detroit, Mich., July 17, 1912.

DRUG DETERIORATION.

For years, those interested financially, in cold-storage warehouses and cold-storage products, have been trying to convince the public that, if the keeping of meat, fish, eggs and so forth in cold-storage did not actually improve the quality, it at least had no deleterious effects on the products. Recognizing that products could not be improved by cold-storage but that there was considerable danger of deterioration and believing that the public has a right to know the truth, state legislatures are enacting laws which require that for cold-storage products the duration of such storage be declared on each parcel.

Similarly, while pharmaceutical manufacturerers, in general, are attempting to convince us of the permanence of their pharmaceutical products, it is being recognized more and more that there are a considerable number of drug products which are liable to suffer more or less seriously with age. In commenting on ex-

periments which have been made by Pittenger and Vanderkleed to preserve fluid-extract of ergot by sealing it in glass ampules, the Journal A. M. A. (Sept. 21, 1912, p. 959), says:

"The investigation of Hale on Digitalis, of Edmunds and Hale on ergot, and Dohme on calabar bean, coca and aconite, have revealed the fact that many drug preparations deteriorate, and that drugs are often several years old when they reach the patient. These facts have been emphasized, also, through a report of the Council on Pharmacy and Chemistry dealing with the testing of epinephrin solutions in which the Council recommends that 'manufacturers stamp the age of manufacture on the container, to guard against samples which are obviously overaged.' Naturally some manufacturers have asserted that the reported deterioration is accidental, or have tried to put the blame on the pharmacist. Some have shifted their previous claims as to strength in such a way as to avoid responsibility. Some firms, however, instead of attempting to dodge responsibility, are doing what ought to be done, and indicate the date of manufacture on the label of those preparations which are prone to deterioration."

Although many medical preparations no doubt are relatively permanent, it is not unfair, in view of the lack of definite information on the subject, to ask that the date of manufacture be placed on all labels of medicines. As manufacturers quite generally put on each package of a given preparation a number which identifies the "lot" from which the particular product is taken, such a system of dating would impose no extra expense to the manufacturer. It would merely supply information to which the physician, the pharmacist and the public all are entitled.—*Texas State Jour. of Medicine.* (Oct. 1912, p. 159).

DETERIORATION OF SPIRIT OF NITROUS ETHER.

F. L. SHANNON, STATE ANALYIST, LANSING, MICHIGAN, DAIRY AND FOOD DEPARTMENT.

Spirit of Nitrous Ether, commonly called Spirit of Nitre, is defined by the Eighth Revision of the United States Pharmacopœia as "An alcoholic solution of Ethyl Nitrite yielding, when freshly prepared and tested (by the method given in the U. S. P.), not less than 4% of the Ethyl Nitrite."

That this 4% of ethyl nitrite is easily lost under improper conditions is a matter of common knowledge among those who have anything to do with this preparation. Reports of various state departments charged with the enforcement of the drug laws show that this preparation has caused more or less trouble. It appears that the fault lies mainly in the manner in which it is stored. In the state of Michigan the records of the laboratory show that during the year of 1912 over 72% of the samples examined were found to fall below the required standard of the U. S. P.. When some of the manufacturers of these preparations were asked to explain why their spirit of Nitrous Ether did not conform to the U. S. P. their reply was that it is impossible to keep such a volatile preparation for any length of time and have it of standard strength. However, investigation into

the manner in which such pharmacists stored their preparations generally disclosed the fact that they were not keeping it in strict accordance with the U. S. P. directions, only making a half-hearted attempt, if making any at all, to store it as their Pharmacopœia told them to.

In order that we might enlighten these people, this laboratory started an experiment some time ago, to determine the keeping qualities of spirit of nitrous ether. The plan of the experiment was to duplicate, as nearly as possible, conditions as may be found in any medium class drug store, by selecting bottles of various sizes and colors, by storing in a semi-dark place and at a temperature that could not be called cool. Thus it will be seen that the directions of the U. S. P. were not followed to the letter but were only attempted and carried out in an incomplete manner.

The experiment was conducted as follows: On March 5, 1911, a quantity of spirit of nitrous ether was made up and placed in seven bottles. The bottles used were ordinary half-pound and one-pound bottles, two of which were of amber glass, one green glass, and four flint glass bottles, such as may be found in any drug store. Each bottle when filled was securely fitted with an ordinary cork stopper. The bottle was then thoroughly shaken and an assay made of its contents.

The bottles were again securely stoppered and placed in a semi-dark place in a room adjoining the working laboratory, the temperature of which is about the same as that in the laboratory, viz., 65° to 75° F. At the end of three months the bottles were removed and the contents assayed. This procedure was continued for a period of fifteen months, assaying the contents of the bottles at intervals of three months each, except the time between the fourth and fifth assays, when a period of four months elapsed, and the results tabulated in the following table:

TABLE I.

Sample No.	Size of Bottle	Kind of Bottle	1st Assay Mar. 5, 1911, Time of Filling	2nd Assay June 5, 1911	3rd Assay Sept. 5, 1911	4th Assay Nov. 5, 1911	5th Assay Mar. 5, 1912	6th Assay June 5, 1912
1	12 oz.	Amber	3.98	3.95	3.83	3.73	3.70	3.56
2	12 oz.	Amber	3.99	3.86	3.73	3.61	3.53	3.45
3	16 oz.	Green	3.95	3.88	3.81	3.71	3.66	3.60
4	8 oz.	Flint	3.97	3.68	3.52	2.14	2.14	1.88
5	8 oz.	Flint	3.94	3.77	3.42	3.41	1.25	....
6	16 oz.	Flint	3.95	3.72	3.42	3.42	3.20	2.94
7	8 oz.	Flint	3.92	3.39	3.39	3.10	3.10	2.89

TABLE II.

Loss at the end of.....	2 mo. 7 Samples	6 mo. 7 Samples	9 mo. 7 Samples	12 mo. 7 Samples	15 mo. 6 Samples
Maximum	0.53	0.53	1.83	2.69	2.09
Minimum	0.03	0.14	0.25	0.28	0.35
Average	0.207	0.37	0.65	1.01	0.90

TABLE III.

Loss of Samples Stored in Colored Bottles at the end of.....	3 mo.	6 mo.	9 mo.	12 mo.	15 mo.
Maximum	0.13	0.26	0.38	0.46	0.54
Minimum	0.03	0.14	0.25	0.28	0.35
Average	0.07	0.18	0.29	0.34	0.44

A study of the table will show that for the first six months the samples retained their strength very well, the maximum loss under these conditions being only 0.53% with an average for the whole of only 0.37%. The greatest loss during the entire time seems to be in the samples stored in the flint glass bottles, although with the exception of Sample No. 4, the remainder kept fairly well for the first nine months. During the latter part of the experiment, however, the samples in the flint glass bottles decreased considerably, while those in the amber and green-colored bottles decreased in strength only a small amount in the whole fifteen months and the decrease was quite regular, the maximum being but 0.54% with an average of 0.44%. It would therefore appear that spirit of nitrous ether, when manufactured properly so that it will contain 4% Ethyl Nitrite when freshly prepared and stored in small dark-colored bottles in a cool place will remain standard strength for a long period of time. The pharmacist should make up this preparation in such quantity that the whole can be disposed of in a period of six months. He then should have no fear that he is not dispensing a U. S. P. article all the time.

I am indebted to Mr. A. R. Todd of this Laboratory for assistance in this experiment.

LABORATORIES OF THE MICHIGAN DAIRY AND FOOD DEPT., 1912.

COMPOUND SYRUP OF HYPOPHOSPHITES.

SAMUEL T. HENSEL, PH. G., DENVER, COLO.

Our judgments are frequently governed by theory regardless of what experiment will teach, and we are in consequence frequently led into error, or are apt to be guided more by it, than in testing the matter under consideration by actual experiment.

I am led to the above reflection by a conversation which I had the pleasure of having with a member of the association, who is also an officer in the newly created section on "Pharmacopoeias and Formularies," during the meeting of the American Pharmaceutical Association at Denver, August 19 to 24, 1912.

The subject of our conversation was the Compound Syrup of Hypophosphites, and I had asked the question, Why it was that the sucrose content of that syrup was not up to the point of complete saturation?

The reply which I received was to the effect that if the sucrose content was increased, there would be a tendency to the "salting out" of the chemical salts entering into the composition of that syrup, and that theoretically, it was not expedient to go beyond what had been adopted by the Committee of Revision of the United States Pharmacopoeia VIII.

I am nevertheless constrained to call attention to the fact that in physico-chemical processes, it is possible to make a saturated solution of a salt, and still be able to add other concentrated solutions without danger of the precipitation of the saline content of either solution.

This is in complete harmony with my experience in the manufacture of the

syrup, and I would add that for many years I have been impressed with the importance of the complete saturation of all syrups and have adopted the method of cold percolation, as the most effective, and by far the most desirable from every point of view.

More recently, within the past two or three years, I determined to apply the process to the compound syrup of hypophosphites. This was done with the most surprising and gratifying results, and with but few exceptions, I have continued to make it in this manner upon all occasions.

My method of procedure is as follows:

First: The solution of the iron and manganese hypophosphites and the sodium citrate, is effected in a scrupulously clean porcelain capsule with the careful application of heat, filtered, and allowed to cool as directed in the U. S. P. VIII.

Second: The solution of calcium, potassium and sodium hypophosphites is made in the manner directed by the U. S. P. VIII.

Third: The alkaloids quinine and strychnine are dissolved in the diluted hypophosphorous acid as directed by the U. S. P. VIII.

The above three solutions are then mixed, and this mixture is used as a menstruum for the percolation of the sugar. In regard to the latter, we have found Confectioner's Crystal A sugar the best both with respect to purity and texture.

The sugar is simply placed in a cylindrical percolator in the proportion of two parts by weight of sugar to one part by weight of solution, after having previously placed absorbent cotton moistened with distilled water in the neck of the percolator.

The physical advantage of this method is that the mean temperature of the locality where the syrup is made will serve as a control, the menstruum at the normal temperature of the place taking up no more and no less sugar than its coefficient of solubility for that temperature, and since under these conditions, it cannot become a supersaturated solution, will remain an elegant, stable and unalterable product.

Obviously, syrup made in the southern states, will contain a trifle more sugar than syrup made in states in the north. In both cases, however, the product will contain no more sugar than is necessary for its complete preservation and stability.

A recent experience with this syrup convinces me that heat, except in the preparation of the initial solution, should be rigidly avoided. This statement is supported both by observation and experiment as the following will indicate.

A short time ago I had occasion to make 4000 cc. of this syrup, and as the exigencies of the case required an immediate production, I departed from my usual custom of percolation, and prepared the syrup in accordance with the U. S. P. VIII, by agitation. At the expiration of a few hours there remained about 200 grams of undissolved sugar, and in order to hasten its solution, the container was carefully placed under the hot water faucet and the whole mass of syrup raised to temperature of not more than 130° F.

In a short period thereafter, about two weeks, I noticed a change in the syrup, it becoming cloudy upon being poured into the shop bottle. This cloudiness dis-

appeared after standing an hour or so and I became convinced that it was due to a partial fermentation, the cloudiness being directly caused by the agitation produced by the act of pouring, thus expanding the occluded CO_2, producing a mass of minute bubbles.

During the gradual heating and subsequent slow cooling, there was a partial inversion of the sugar, this molecular change producing a form of sugar which immediately became subject to the bacterial influences which were at the same time rendered active by the increase in temperature, and the fermentation was proportionate to the sugar so inverted.

This hypothesis is seemingly supported by the following well-known fact.

If a given volume of a saturated solution of sucrose is placed in a test tube, and Fehling's test be applied, there will be no reaction.

If, however, the same volume of solution be heated to the boiling point and the copper and alkaline tartrate solutions of Fehling's test be alternately added, there will be an immediate characteristic reduction of the copper, showing that a molecular change has been effected in the solution by the application of heat.

This change is not only indicated by the above chemical test, but is also revealed by physical examination, which show that its optical activity has changed.

THE CRITICS OF THE PROPAGANDA.

In a recent issue of a well-known drug journal* is published a very instructive and helpful article by a professor in one of Chicago's medical colleges, entitled, "How Some Doctors View U. S. P. and N. F. Propaganda," with particular reference to the objections of some doctors to this movement.

While practically all of the statements made are true in a large measure, it is also true that all of them must be largely discounted in the light of the present status of the sister professions of medicine and pharmacy; this for the simple reason that insofar as medicine is not an exact science there will always be honest differences of opinion as to how the propaganda movement should be carried on, and for the further reason that any theory that will not work out practically is of absolutely no value whatever.

To begin with, the article opens up an old wound that had begun to show unmistakable signs of healing, as follows:

"Some doctors object to the therapeutic information that is gratuitously administered to them by the druggists. What, they say, do druggists know about therapeutics? And, I must confess, that some of the therapeutic ideas advanced by pharmacists in this connection, though taken from text-books, are antiquated and not in keeping with advanced conceptions. Would it not be better if pharmacists confined themselves in their literature intended for doctors to the discussion of things that druggists really know better than doctors, e. g., pleasant administration?"

This surely comes with poor grace when it is remembered that very few doctors out of the 150,000 in the United States objected to the "gratuitous information

*Journ. A. Ph. A., November, 1912, p. 1190.

administered" by the detail man and the pharmaceutical manufacturing houses, and because they did not object, we have today the lamentable fact to consider that the medical profession is prescribing hundreds of nostrums and specialties. But this is an old story.

Well may we ask: "Do these detail men and these houses know anything about therapeutics?" The deplorable condition of our materia medica as represented by the prescriptions of the average nostrum-prescribing physician would indicate that materia medica is a hodge-podge of nothingness; this is further illustrated by the chronically sick and diseased condition of thousands and thousands of our people who are being treated by nostrums and specialties.

This propaganda movement is not going to please everybody, and least of all will it please all the physicians. As the article under discussion truly says: "The better educated the doctor, the less will he be in need of U. S. P. and N. F. propaganda." This statement is the best testimonial the propaganda movement has ever had, for it says, in a nut-shell, that when the doctor is educated to know and to use U. S. P. and N. F. drugs and preparations, his materia medica education is complete.

But this propaganda movement is not intended to be of value to every doctor, as far as the pharmacists' part, as represented by the N. A. R. D., is concerned. The professors in the medical schools are privileged to teach their young charges the proper things in materia medica; a privilege that has been sadly and criminally neglected in the past.

It is not intended for the ethical and conscientious physician who already knows that prescribing official drugs and strictly open-formula prescriptions is the only way to get results and is the only way in which the public is interested, financially.

This propaganda movement is intended to reach, and does reach, that great class of physicians who are looking for help that no medical journal will give them and who cannot afford to take a post-graduate course in a medical college to learn their materia medica "all over again"; and these physicians do not object to "the therapeutic information that is gratuitously administered to them by the druggists" (that is, by the N. A. R. D.).

It is true that druggists have a commercial or financial interest in this movement, but let not critics forget that the most enlightened self-interest of these same druggists is the best kind of ethics and is what will finally win for this movement, and make medicine and pharmacy what they should be, professions. We only wish there was more of such "commercial" interest manifested, for this same "commercial" interest has, in the past four years, dealt the death blow to hundreds of nostrums, and has already seriously crippled the existence of many thousand other useless preparations.

Physicians, and ethical physicians especially, little realize how the medical profession, as a profession, has tied the druggists' hands. The competition that this profession is offering the pharmacists through free medical dispensaries and dispensing physicians is most lamentable and cannot be considered otherwise than a clear case of theft, and as long as this thing is permitted, medical ethics and pharmaceutical ethics are little more than monumental jokes.

If these things had been well considered, the following portion of the article in question would probably have been worded differently:

"Quite a number of doctors feel that the druggist is in this movement merely for the sake of dollars and cents, that the same commercialism lies behind it that leads him to 'counter-prescribing,' to indiscriminate refilling of prescriptions, and to substitution. To antagonize this objection, propaganda for ethical pharmacy should accompany the U. S. P. and N. F. propaganda. By the way, what is ethical pharmacy? Does anyone know of a code of pharmaceutical ethics? And if not, is it not time that such a code be devised?"

It is time (and the necessity for it has long existed) that pharmacists have a code of ethics, surely but of what value is such a code if the physician legally robs the pharmacist of two-thirds of his business?

Notes has certainly paved the way for an ethical pharmaceutical profession, and he who runs may read. But as the physician will not relinquish, voluntarily, that to which he has no moral right, namely, compounding and dispensing, it behooves the pharmacist to get what is his by right, through legislation, in order that his profession and art may be conserved and protected. This legislation is in a formative stage now and we shall watch and see if the physician will help the pharmacist, or hinder him.

For the guidance of any future criticism of the propaganda movement, it would seem, therefore, that critics study the situation carefully and direct their remarks where they will fall on productive soil.

Well directed criticism makes for intelligent progress and the N. A. R. D. propaganda movement certainly desires to make intelligent progress. But until it can be shown that the "therapeutic information administered" is no longer needed and is no longer welcomed by those physicians for whom it is intended, we will continue to administer our monthly doses of Monthly Therapeutic Topics and pay the postage, besides.—N. A. R. D. NOTES.

TIME TO STRIKE BACK.*

LINWOOD A. BROWN, PH. C., PH. D., LEXINGTON, KY.

Recently, I have been paying special attention to some of the slanderous and libelous statements about druggists published in the newspapers, in the form of patent medicine advertisements, and have come to the conclusion, that if the druggists of Kentucky have any gumption about them, it is time for them to strike back.

Almost every town in this state, large enough to have a newspaper and a drug store, can furnish an example of some of the lying statements commonly found in patent medicine advertisements.

A great many druggists for the sake of a little cheap advertising will allow any patent medicine "faker" to print their foul, and sometimes vulgar, indecent stuff above their names, for the mere sop of being called "special agent," etc.

*Paper presented to the Kentucky Pharmaceutical Association.

Such advertisements are usually cunningly worded so as to lead the unthinking public to believe that Blank, their druggist, knows the composition of the stuff, or is recommending it, or will guarantee it with his own money.

There is hardly any line that the druggist handles that keeps as much of his capital tied up, and which yields him as small a profit as patent medicines.

I have seen druggists allow themselves to be hypnotized into buying a gross or half-gross of some new patent, that is being widely exploited in his town or neighborhood, by the bait of a dozen bottles free and a lot of gaudy pictures and cards, that will make his store look like a side show in a cheap circus.

That same druggist will take this "stuff" and fill his show window with it, and try to get his friends and customers to buy it, and what is the result?—An ad appears in the next morning's paper, which says among other false and misleading statements, "No cheap substitute urged by a tricky, (or dishonest, or unscrupulous,) dealer, though it may be better for him to sell, can be 'just as good' for you to buy."

The people read this, and knowing that the manufacturer of this preparation is in the drug business, think he knows what he is talking about, and their estimation of your honesty and integrity goes down several notches.

Now, it seems to me, that this kind of thing has gone on long enough, and that it is about time for you to put on your fighting clothes and put a stop to such things.

If you don't deny such statements, no one else is going to do it for you, and if you don't deny them, you stand branded as "substitutors," "tricky dealers," "dishonest druggists," and a few other choice epithets that your friend, the patent medicine man, can think up.

A druggist usually stands pretty high in the public confidence, and he should be extremely jealous of anything that will tend to besmirch his good name or character as an honest, conscientous man.

Patent medicines have been shown up in such a large number of instances to be "fakes," and to be false and misleading in their claims, that the public is losing confidence in medicine, but the druggist should not stand for anything that tends to weaken the confidence of the people in him.

No patent can live long without the druggists' aid, and with a few exceptions, people do not want them badly enough to go to much trouble to get them, if you refuse to handle such.

Anyway, you do not have to give up the best shelves in your store to your stock of "patents." A place under the counter, and out of sight, is good enough for them. Use your shelves for a line of your own preparations, ones that really have some medicinal value to them, and which you can recommend from a knowledge of the ingredients contained therein, in place of a lot of patents of which you know nothing, the manufacturer of which is waiting to stab you in the back, in some advertisement.

As an example of some of the statements, I am going to give some extracts from advertisements which have appeared recently in the Lexington Leader.

In an "ad.," published in the Lexington Leader of May 19, 1911, appears the following:

"If your dealer offers something 'just as good,' it is probably better *for him*—it pays better. But you are thinking of the cure not the profit, so there's nothing 'just as good' for you. Say so."

Here are some choice statements from advertisements of this same firm:

"Do not let any unscrupulous druggist persuade you that his substitute of unknown composition is 'just as good' in order that he may make a bigger profit. Just smile and shake your head."

"No counterfeit is as good as the genuine and the druggist who says something else is 'just as good as * * * * * * * * is either mistaken or is trying to deceive you for his own selfish benefit. Such a man is not to be trusted. He is trifling with your most priceless possession—your health—maybe your life itself. See that you get what you ask for."

"You can't afford to accept a secret nostrum as a substitute for this non-alcoholic medicine of known composition, not even though the urgent dealer may thereby make a little bigger profit."

"Honest druggists do not offer substitutes, and urge them upon you as 'just as good.' Accept no secret nostrum in place of this non-secret remedy."

"Don't be wheedled by a penny grabbing dealer into taking inferior substitutes for * * * * * * * *, recommended to be 'just as good.'

"Do not permit a dishonest dealer to substitute for this medicine which has a record of 40 years of cures. 'No, thank you, I want what I ask for.'"

In the issue of May 20, 1911, the same paper publishes a large advertisement in which occurs the following:

"Do not let any dealer deceive you."

"* * * * * * * * * * * * has given universal satisfaction for more than 30 years past, and its wonderful success has led unscrupulous manufacturers of imitators to offer inferior preparations under similar names and costing the dealer less, therefore, when buying *Note the Full Name of the Company.*"

And, again, this same firm says in an advertisement in the Leader of May 23, 1911:

"The wonderful popularity of the genuine * * * * * * * * * * has led unscrupulous manufacturers to offer imitations, in order to make a larger profit at the expense of their customers. If a dealer asks which size you wish, or what make you wish, when you ask for * * * * * * * *, he is preparing to deceive you, tell him that you wish the genuine, manufactured by the * * * * * * * *. All reliable druggists know that there is but one genuine and that it is manufactured by the * * * * * * * * only."

I have a large number of such clippings, but I will not take up your time by reading them to you, any time that you care to see more, pick up almost any paper and you will find plenty of such advertisements.

Now, I really think this is an important subject, so much so that I am going to make the following suggestion, and you can do what ever you think best about it.

I would suggest that a committee of five druggists, members of the Kentucky Pharmaceutical Association, be appointed by this Association, and to be known as the Committee on Advertisements, and whose duty it shall be to appoint one or more druggists in each county of Kentucky to act with them in reporting to the main committee such advertisements as they consider as being unfair, libelous, indecent, vulgar or misleading in any way, that may be published in their community.

It should be the duty of such committee, if appointed, to notify any firm, person or corporation responsible for such advertisement, that the same is objectionable to the druggists of Kentucky, and that in case such advertisements be not withdrawn or modified in such manner as to be unobjectionable to the Pharmaceutical profession and to the public, the druggists of Kentucky will be requested to refuse to handle the goods of the offending firm, until such firm complies with the demands of the committee.

Furthermore, it should be the duty of the committee on advertisements to request all newspapers, journals, magazines, etc., circulating in Kentucky, to refuse to publish such objectionable advertisements.

Furthermore, it should be the duty of the committee to use all good and proper means in their power in securing the early passage of a model law, prohibiting any advertisement of a medicine, or appliance, for the relief, cure or mitigation of such diseases as Female Diseases, Venereal Diseases, Lost Manhood, Kidney and Bladder troubles, Constipation, Piles, etc.

Such a committee and law could do a great work in removing the stigma of such unjust insinuations as have been mentioned in this paper, also to purify the newspapers from the vulgar advertisements that many of them carry from day to day, and which has reached such an acute state that many of them are hardly fit to be seen in our homes.

BUYING SYNTHETIC REMEDIES.*

WILLIAM C. ALPERS, NEW YORK, N. Y.

A flurry of excitement went lately through the pharmaceutical circles of New York, when it became known that a number of employers and employes had been summoned before a city magistrate in an action brought by the manufacturers of synthetic remedies for violating the trade-mark laws. I have since received many inquiries, by word and letter, as to the legal status of this matter, some of my correspondents referring to a paper read by me before the Manhattan Pharmaceutical Association some years ago touching on this subject. As

*Translated from the Apotheker Zeitung.

these inquiries are quite numerous and as the matter at issue is of considerable importance to every druggist, I hereby give my views and understanding of it to the pharmaceutical press.

That our trade-mark laws are antiquated and iniquitous is admitted by every one who takes the trouble of studying them in all their bearings. They were formulated at a time when trade conditions were entirely different from what they are now. Their prime object was to protect the inventor and manufacturer against fraudulent imitators. As there were at that time no foreign possessors of United States trade marks, or only very few insignificant ones, no distinction was made between domestic and foreign goods, inventions and rights. The laws, therefore, are drafted unreasonably sweeping in one direction and unreasonably narrow in another. That some foreign manufacturers have made use of these conditions to their own advantage and the exclusion of domestic competition, is well known—but this is not the matter under discussion at present. The fact is that these laws exist and that every citizen of the United States is bound to obey them. To show disapproval of an antiquated or bad law by violating it is a risky procedure and doubtful remedy. Relief can better be brought about by strictly enforcing it and showing the public its iniquity. Lately an addition was passed by the Legislature, making the violation of a trade-mark law a felony punishable by fine or imprisonment, or both.

The action of the manufacturer was based on this new law and a number of druggists were summoned before the magistrate for violating it, the charge being that they had sold certain goods that were not trade marked, when articles like Aspirin, Pyramidon and others were called for. No charge of chemical or therapeutical substitution was made. The magistrate put the defendants under bail and the cases went to the District Attorney, where they are at present pending. In order to understand the matter thoroughly and answer the many inquiries put to me, I requested a number of my correspondents to send me samples of these so-called spurious goods, original packages and tablets, all of which had been bought from irresponsible dealers under the assertion that they were genuine. An examination of some of these revealed the following facts: Most of the packages seemed to be original and genuine as far as ocular examination could reveal, which evidently led many druggists to buy them as genuine. The price paid was from 10% to 20% below the market price. The weight of the contents of all these packages was short. A package labeled Pyramidon contained only 397 grains instead of 437½ grains. Packages labeled Aspirin varied from 375 to 400 grains. Admitting now that the contents were genuine, the unlucky buyer saved nothing by the lower price and risked the reputation of his whole life for an imaginary saving—in reality for being deceived. Examination of the tablets gave a more astonishing result. Their weight was generally between 5 and 6 grains; but none of them contained more than 2 grains of Aspirin, some much less. A sample of spurious Protargol showed 4% of silver and contained more than 60% of insoluble matter, while the genuine, according to the manufacturer's claims, contain 8.3% of silver and is entirely soluble in water. What now did the druggist who bought this stuff gain by paying a lower price? If he wished to sell so-called 5-grain tablets that contained only 1 or 2 grains of active medicament, he could mix the drug with milk

sugar and have them stamped out by almost any manufacturing pharmaceutical house at a much lower price than he paid for them. He paid much too dear for his whistle. He was cheated himself and undesignedly deceived his physicians and the public by selling these goods. He cannot hold the seller responsible and must take the consequence of his error of judgment himself. His credulity may cost him more than he possibly could save. He certainly did not intend to deceive and cheat, yet he did so unintentionally. For I speak here of those druggists who thoughtlessly are led into such practices, without any intention of doing wrong. I have nothing to do with those who knowingly deceive.

No matter what we think of the motives of the manufacturers, there are two lessons in this affair that stand out strongly and boldly, and should be heeded by every self-respecting druggist:

First: Buy goods of this nature only from responsible wholesale dealers who are willing to protect you and stand by the genuineness of what they sell.

Second: Join your state and the national association and by your membership—if you will not help actively—contribute your mite to the fight against these iniquitous laws. Urge your association to put every other matter aside, until our trade-mark and patent laws are altered in such a way that all parties concerned—manufacturer, wholesaler, retailer, physician and public—are fairly and equally protected. If every druggist in the country would heed these two lessons, many things about which we daily complain would be better.

When reform of the antiquated laws that lie at the bottom of these undesirable conditions is urged, the majority of pharmacists and many associations think that such reform means in the first place a fight to the bitter end with the manufacturers. This belief is a fundamental error and the main reason why so little has been accomplished. Nor will the abuse ever be remedied on these lines. There exists a certain correlation and a common field of interest between all and this field should be cultivated. Not fight, but cooperation will bring results. If once the existing mistrust and prejudice is removed and all—inventor, manufacturer, wholesaler, retailer and physician—join hands, each one admitting that the others have just claims and rights, there will be no doubt of success and no legislature or Congress will resist the harmonious demands of all parties concerned.

Papers Presented to Local Branches

THE MAKING OF CANDY MEDICINES.*

BERNARD FANTUS, M. D., CHICAGO.

The problem of pleasant medication for adults is well taken care of by the pill, the capsule, and the elixir; but with children our means have been much less satisfactory. "I simply cannot get my child to take this medicine," is the report one often receives from the fond and too indulgent parent, sometimes when the medicine was really unobjectionable or even pleasant. To some children anything given by spoon carries with it the idea of nastiness. This lead me, in view of the child's great love for candy, to experiment upon devising candy forms for medicines. Starting with confection of senna, I soon discovered that children did not consider it a confection. Evidently there is a great difference between the pharmacopœial and the child's idea of a confection. The pharmacopœial lozenges, with the exception of the santonin troches, were likewise unsatisfactory. So I took lessons from a real confectioner to determine what candy form would be most suitable for purposes of medication. Sulphur taffy and cod liver oil chocolate creams were failures. As a result of these studies in the candy shop I finally arrived at the following conclusions: (1) Candy medicine to be successful must be absolutely pleasant and must disintegrate rapidly in the mouth, for a sick child will usually not suck or chew a candy as a healthy one would. (2) Only tasteless or almost tasteless medicaments can be given in candy form. (3) The fondant is the most suitable form for the purpose of candy medication, as it disintegrates rapidly. (4) As the fondant is rather troublesome to prepare and becomes hard with age, while a lightly compressed tablet made from powdered sugar is very similar to the fondant and keeps well, the latter is evidently the practical form for candy medication. This form has already been in use for the administration of calomel and of phenolphthalein.

A systematic search showed that quite a number (about twenty) other medicaments could be put up in candy form; and use of these in practice has been so pleasing, that I would be very sorry indeed if I had to get along without them. I believe that candy medication has a future, but am afraid that this future will be in the form of proprietary exploitation and of self dispensing by physicians, unless pharmacists equip themselves to prepare these tablets.

In the past, pharmacists seem to have been afraid to attempt tablet making. It is generally supposed to be a difficult process, requiring special skill and expensive machinery. With your permission, I shall proceed to demonstrate that this is not the case. A tablet machine that would be satisfactory for putting up

*Read before the Chicago Branch of the American Pharmaceutical Association, December 17, 1912.

prescription quantities of tablets, e. g. Whitall Tatum Company's, can be bought for about $10. It will work satisfactorily, if the punches are kept clean, free from scratches, and slightly oiled with liquid petrolatum. It takes no more time or skill to make tablets than it does to make pills or suppositories. Preliminary granulation and drying are not necessary, if A. Schleimer's suggestion (published in *The National Druggist,* Feb., 1909, p. 54) is made use of, to add 3 percent. of cacao butter to the powder, which serves at once as a cohesive, rendering granulation unnecessary, and as a lubricant, preventing sticking in the die. The only objection to the cacao butter is that it is liable to become rancid, hence it is suitable only for the extemporaneous preparation of tablets. Have found, after a little experimenting, that low melting paraffin answers the purpose just as well as cacao butter, and does not become rancid. A further addition of 3 percent. talcum powder is likely to become necessary to keep the tablets from "picking," i. e., sticking to the punches.

As a typical example of a formula for a candy tablet, we may take:

ARSENIC TRIOXIDE, 1/100 GRAIN.

Arsenic trioxide	1 grain
Paraffin, low melting point	9 grains
Talcum	9 grains
Malachite green, 1% solution	10 minims
Spirit of peppermint	5 minims
Powdered sugar	281 grains

Having thoroughly triturated the arsenic trioxide with the sugar, add the malachite green solution and the spirit of peppermint and triturate until the green color is perfectly uniform. Then add the paraffin and triturate again. Finally, the talcum is added, not by trituration, however, but by stirring with a spatula; and the powder is ready for compression in the tablet machine. Use 5/16 inch die and punches, and make from above quantity 100 three-grain tablets.

The same formula may be used for making candy tablets of tartar emetic, calomel, mercury biniodide, mercury protoiodide, mercury with chalk, nitroglycerin, elaterin, hyoscine. Of course any other harmless coloring or flavoring may be used.

Insoluble substances that are given in larger doses, such as bismuth subnitrate, chalk, magnesia, saccharated iron carbonate, or reduced iron, require at least twice the volume of sugar to be added to them to keep the insolubility of the powder from being noticeable.

Substances that have a slight taste, such as tannalbin, phenacetin, or digitoxin, are best disguished by the addition of 10 percent. of powdered cacao to the sugar. Chocolate tablets can usually be compressed without the necessity of adding cacao butter or talcum. Their flavor is improved by the addition of a little tincture of vanilla or of vanillin.

The most tasteless form of quinine I have been able to find is aristochin, which is considerably less bitter than euquinin or quinine tannate. The slight bitterness of aristochin is almost entirely overcome by the addition of a small amount (2 or 3 percent.) of sodium bicarbonate, and of cacao and sugar in the proportion previously mentioned.

The only sufficiently tasteless salicylate I have been able to find is salophen, which is easily made pleasant by the mere addition of sugar.

Of soluble substances very few are suitable to candy medication. Sodium bicarbonate one-half grain to four and one-half grains of sugar with rather strong peppermint flavoring makes a fairly palatable tablet. Hexamethylenamine, which has a sweetish taste, can be made into a very pleasant chocolate tablet by using the following formula:

HEXAMETHYLENAMINE, ¼ GRAIN.

Hexamethylenamine	25 grains
Cacao powder	75 grains
Powdered sugar	400 grains
Tincture of vanilla	15 minims

Make into 100 five-grain tablets.

For the salines,I have not been able to devise a candy form. Have therefore selected sabromin and sajodin, which are the most tasteless representatives of bromides and of iodides, respectively, that I know of. These are easily put up in the form of palatable tablets, especially by the use of cacao.

One objection that can be urged against candy medication is that children might poison themselves by eating too many of them at one time. This is indeed a serious objection, which can, however, easily be overcome by not prescribing more tablets than could be taken at one time without danger.

In the candy tablet, Dr. Robert M. Fuller's invention has reached its highest utility. Perhaps some day candy tablets may be official in the Pharmacopœia. If all druggists were equipped to prepare them extemporaneously, so that doctors could modify the dose and combination to meet the needs of the case, they would obtain their highest opportunity for doing good, and would fill a long felt want.

THE PHARMACY OF THE OXYCHOLESTERIN OINTMENT BASES.*

J. ROEMER, WHITE PLAINS, N. Y.

The history of the discovery of what is termed a mixture of iso and oxycholesterins or waxy alcohols is one of manifest interest and the details of which were ably presented by Dr. Unna before this branch at the meeting last June.

In so far as the chemistry applies to these compounds, little appears in the literature, but their peculiar properties in relation to the therapeutics of ointments will no doubt furnish an incentive for wider knowledge.

From the pharmaceutical point of view we are particularly interested, and the little that is known concerning them is of great value, and the possibility and even probability of these compounds finding a wide field of usefulness, makes it necessary that the pharmacist to some extent become acquainted with their pharmaceutical applications for which they may be desired.

The first question that presents itself is what are the iso and oxycholesterins,

* Read before the New York Branch, December 9, 1912.

which impart such an all important property on account of which they find special usefulness? The nearest we can get to the answer for this is that they are said to be waxy alcohols, to which has been assigned the name, "so-called oxycholesterin group," unsaturated alcohols of an homologous series, perhaps included in the group starting with the formula C_{10} $H_{20}O$ and ending with the formula O_{26} $H_{44}O$.

This question to pharmacy then must remain for more specific determination, but sufficient for our present demands is the information that they are obtained through processes of alcoholic saponifications and fractional distillations from the washings of wool fat, they are, however, not supplied as such, but are mixed with certain proportions of neutral ointment bases, to which they impart the desired therapeutical properties.

References to greater or less extent will be made to the statements in the article on this subject by Dr. Unna, and first we note that he states that the base supplied consists of 5 percent. of free alcohols of the iso and oxy cholesterin group, together with 95 percent. of petrolatum; this produces what is known as anhydrous eucerin, and this, with addition of a certain amount of water, yields "Eucerinum cum aqua" or, as commercially known, "Eucerin."

These then are assumed to be the preparations supplied and both of which so labeled were obtained.

The Eucerin anhydrous is an unctious pale yellow mass of petrolatum-like consistency; the Eucerin, an unctious mass of cream color appearance and softer consistence; Eucerin anhydrous is transparent in thin layers, amorphous, and possessing a very faint odor, peculiar to hydrocarbons, tasteless, neutral in reaction; these properties are merely noted for the substance at present obtained but are no criterion for what may hereafter be supplied, and which properties must depend upon the choice of base which is used for admixture, the object for enumerating these properties is to show that considered from formulas as given by Dr. Unna this is not the same, as further facts will prove.

Accepting the formula as given, it occurred that possibly a separation may be effected and with this idea in view a number of methods were tried which finally resolved itself in the process of treating the mass with sufficient ether to effect solution and which by addition of ethyl alcohol caused a separation of a white paraffin like body; this was removed by filtration and the filtrate subjected to fractional distillation, first obtaining the ether, and then the alcohol, with an oily residuum remaining and which constituted 27 percent. of the original anhydrous eucerin.

Drying the paraffin-like mass retained on the filter, this was found to represent 71.6 percent., making a total of 98.6 percent. of the original, with a loss of 1.4 per cent., which was later obtained from ether by evaporation, the alcholic distillate retaining nothing.

The paraffin-like body obtained, together with the oily residue, developed the fact that petrolatum as such was not the base, although they were found to be hydrocarbons and that the oxycholesterin group was wholly retained in solution by the oil.

From tests applied, namely, the only one so far as ascertained producing any

distinctive reaction, concentrated sulphuric acid, no cholesterin remained in the paraffin mass, further attempts to further separate this group from the oil proved unsuccessful, due to limited time.

Now, comparing the statement by Dr. Unna that this anhydrous base will carry an amount of water up to 500 percent., with the statement on label for same, we find there, that this capacity is only 150 percent., while the base, supposedly already containing water, will carry 200 percent. To reconcile these differences as to exact meaning would serve no purpose other than satisfying an opinion, sufficient, that the product supplied is somewhat different from the one spoken of in Dr. Unna's address, but this does not materially affect its properties as I will later demonstrate.

As to tests for identity of these cholesterins, the one devised by Lifschuetz, the acetic sulphuric acid test with the spectrum, no doubt affords a distinctive reaction, but one which is as characteristic is concentrated sulphuric acid alone, by contact, which produces a clear, reddish brown ring, in distinction to the acetic-sulphuric acid, which produces a light brown to brown coloration.

Admixture with concentrated nitric acid produces no reaction in the cold, but on heating, the acid is practically decomposed with evolution of nitrogen tetroxide and a light brown color is imparted to the liquid.

It is indifferent to concentrated hydrochloric and acetic acids, as likewise to strong solutions of the hydroxides of sodium, potassium and ammonium.

Its solution in ether, benzin, chloroform and carbon tetrachloride is opalescent and on standing the solution in ether and benzin clear from above downward and the solution in chloroform and carbon tetrachloride clears from below upward.

The oily portion separated, and which contains all of the cholesterins, is non-saponifiable with alcoholic potash.

As to eucerin anhydrous this answers well for all purposes and will carry water up to four times its own weight; this is effected by gradual addition and thorough incorporation, and in this respect justifies its ability and contradicts the label, while the eucerin will carry an amount of water proportionate to this and dependent on amount already added.

That for pharmaceutical purposes it will assume a place occupied by no other base heretofore known may well be considered probable from its physical properties of carrying enormous quantities of water aside from its stability, neutrality, and its indifference to most medicaments used in ointments.

Mixtures prepared with this base with varying proportions of water up to 400 percent., and subjected to ranges in temperature from 50° to 100° F., and kept for days under these conditions have remained permanent.

The basis of the working formula adopted was one carrying two parts of 200 percent. of water, with which experimental ointments containing boric acid 10 percent., zinc oxide 20 percent., yellow mercuric oxide 10 percent., phenol 3 percent., sodium hyposulphite 10 percent., silver nitrate 5 percent., and potassium iodide 10 percent., were made, all of which yield ointments representing the specific therapeutic agent that answers the demand for all that is desired.

This formula also was employed for cold cream, to which any desired odor may be imparted.

Particular reference is made to the statement for its capacity for metallic mercury and the simplicity and rapidity with which this can be effected.

In so far as the quantity of mercury is concerned, the statement holds true, but as to simplicity and rapidity, there must be a great latitude in the meaning of the words as used by Dr. Unna. The exact time was not noted, but during three days, as time permitted and elbow grease held out, it was rub, rub, rub.

In respects to Balsam Peru, this is a failure and no appreciable amount of water can be incorporated, separation takes place and an unsightly ointment results.

Similarly with ichthyol, it is inadvisable to use more than half its weight of water.

With solution of ammonuim hydroxide, subacetate of lead solution and aluminum acetate solution these will, using part for part by weight, produce pharmaceutically perfect ointments; glycerin in any quantity equal to carrying capacity, to any consistency will produce perfect combination. Alcohol is not as readily carried and difficulty is experienced in incorporating an equal part.

Reverting now again to the cholesterin to which this property is attributed but of which, in isolated state, none is obtainable and have not been separated, it is with interest we look forward to such and ascertain under what precise condition they act.

The oily residuum obtained by distilling the filtrate before mentioned presents a peculiar behavior toward different bodies and through experiment it developed that in admixtures with alcohol, chloroform, carbon tetrachloride and ether, the capacity for carrying water was to a great extent impaired and no permanent emulsification was possible by addition of water.

Assuming from Dr. Unna's statement from experiments carried out that Anhydrous Eucerin will absorb or carry 50 percent. water and attributing this to the 5 percent. of the cholesterin group, it follows that 1 part of this substance imparts a capacity for carrying 80 parts of water, a quantity in itself which is enormous.

But a most peculiar condition developed by trying numerous bodies in conjunction with this. By itself, as above stated, it will carry 80 parts of water, but alcohol, chloroform, carbon tetrachloride and ether impair this property, while on the other hand the addition of benzin produced a most peculiar phenomenon. By using 5 drops of this oily residuum, which being 27 percent. of the whole, this itself will represent 18.5 percent. of the oxycholesterin and 18.5 percent. of 5 drops will equal approximately .9 of a grain, adding to this a small quantity of benzin 30 minutes, developed the fact that it will carry by gradual additions, water up to 900 parts; in other words, the intensity imparted by benzin increases its capacity for water 11¼ times the original capacity.

Applying this idea to the base as furnished it holds equal to this condition, and by addition of an amount of benzin equal to amount of base taken, an ointment is produced which can and does hold 9 times or 900 percent. of water compared to the original amount ascertained.

Following this out to experimental conclusion other hydrocarbons were tried

as mineral oil and liquid petrolatum and these likewise increased the physical properties for its carrying capacity for water.

Benzol and xylol of the aromatic group also acted in similar manner, but to lesser intensity.

Trying out experiments with vegetable oils olive and almond, and with lard, produced mixtures which would carry no water whatever and the conclusion is reached that with the employment of the cholesterins for ointment bases, the hydrocarbons *are essential,* for it is to them in combination that this property is imparted.

SUGGESTIONS FOR THE EXTENSION OF THE PROPAGANDA.*

JAMES BAILLIE, ST. PAUL, MINN.

The subject upon which I have been asked to speak appears upon the program of this meeting as "A System for the Extension of the Propaganda."

To formulate such a system would, I am afraid, entail months of careful thought and practical experiment, and to attempt to do so in the short space of time allotted to me would be folly. The best that I can therefore do is to offer a few suggestions upon which such a system might be founded. The main idea of this propaganda, as I understand it, is to eliminate as far as possible the exploitation among physicians of the products of the specialty houses and introduce in their stead the preparations of the U. S. P. and N. F.

To do this would mean the strenuous cooperation of all the retail drug trade, and the basis of all true cooperation is well directed individual effort, each unit working like a well-oiled piece of machinery for the benefit of the whole.

Each individual must find his place in the plan and do his utmost to extend the knowledge of the U. S. P. and N. F. preparations among the prescribing fraternity and to do this means more than mere talk and getting together schemes. It means active, practical, go ahead work. It means that every pharmacist must give more time and study to improving his own knowledge of the standard preparations, so that he can speak of them as of something he is really intimate with.

In the beginning the pharmacist has himself alone to blame for the present condition of affairs. He has let this, the most important part of his calling, slip from him by his own indifference and lack of true professional knowledge, ability, and pride in his own handiwork.

The physician *cannot* be held responsible. The specialty houses have only filled a place which the pharmacist ought never to have left vacant, and in the great majority of cases the physician has been forced to supply his own and his patients' needs where he best could, largely, I am afraid, to his own, and to the detriment of the drug trade, not to speak of the patient who has to foot the bill and is in the end the greatest sufferer.

*Read at the November 21st meeting of the Northwestern Branch at Minneapolis, Minn.

The first step to be taken in the formation of any plan to better the conditions as they now exist, should begin with the training of the young pharmacist. It is for him to take care of the future.

Educate him to the fuller appreciation of the importance of being first a pharmacist in the true meaning of the word. Teach him to realize that with *him* lies the making or marring of what should rank as one of the high professions. Give him every opportunity to become proficient in every branch of his professional work. Help him to become a master in the compounders' art. Were this done and followed up the propaganda would take care of itself and the value of the U. S. P. and N. F. preparations would be recognized by the medical profession, through the men who had been trained and who have given their time and thought to prepare them.

To follow this method would of course take time, but it would be the surest means of attaining a desirable end, and the recognition that apart from a commercial business pharmacy ranks as high upon the professional scale as the practice of medicine itself.

The pharmacist, if he wishes to regain the confidence of the physician, should be able to demonstrate his ability to prepare and furnish by his own work a line of reliable U. S. P. and N. F. preparations or at least be able to guarantee by actual tests the preparations he supplies. He should make the prescription end of his business the most important part of it instead of as sometimes a mere side-line; that is, of course, if he is in favor of this propaganda. If he is not, why not remove his prescription case entirely and leave that work to those who are qualified and willing to undertake it and make it their whole business.

This brings up a point which is quoted in this month's Journal of the A. Ph. A. from the Pacific Drug Review in favor of two different kinds of pharmacies. One to be called the department drug store, where everything that is handled in the modern drug store would still be adhered to except the dispensing of prescriptions and the compoundiing of medicines for the treatment of disease and sickness. The other to be the real pharmacy in name as well as work; to be run on purely ethical lines and to be specially registered as such, and open to the most rigid inspection. The dispensing of prescriptions and compounding of medicines to be the main issue in such a place and all side lines and sundries to be eliminated except those which are immediately acessory as sick room requisites or physicians' supplies. It is difficult to see why such a plan should not be feasible or possible.

There are many in the drug trade at present who have neither time nor inclination for the necessary exacting and fussy work of the compounder, but whose tastes run more along the broader lines of commerce. Let them therefore develop along the lines of least resistance to their desires and make the most of the many side lines which the present system seems to demand, leaving the purely professional duties to those who like it and could make a success of it, unhampered by commercialism. A system like this would leave the man of professional desire, time for perfecting himself and improving his work. In due course his efforts would bear fruit in the shape of public and medical confidence, with the attendant remuneration for skilled work well done.

Under the conditions recently in vogue any plan for the furtherance of U. S. P. and N. F. propaganda would be most difficult to solve and still more difficult to follow.

There is a lack of unanimity in the drug trade which is not easily overcome. This is due in a great degree to the passive antagonism between the professional and commercial branches of the business. Could the two be reconciled and fused together, something might be found which would prove an easy solution for the problem.

If the druggists could meet and arrange, through committee or otherwise, to prepare or have prepared samples of U. S. P. and N. F. preparations and begin a crusade among physicians to actually demonstrate the superiority of these preparations and supply suitable literature, a measure of success might be attained. To do this would only mean following the plan of the specialty houses in getting in their detail work and keeping at it all the time. No half-hearted methods would have much chance to succeed and the earnest cooperation of every druggist would be necessary to carry the campaign to anything like a successful issue. A good form of literature for distribution among physicians would be an abbreviated N. F. to include some of the U. S. P. preparations; a small edition containing the names of the preparations, with doses and quantities of each active ingredient in a dose, and where the general medicinal properties of each preparation could be seen at a glance. A therapeutic index could be added whereby a number of formulas would be found for each indication. This book could be arranged and compiled by a committee of the Pharmaceutical Association and sent to the druggists who were interested and by them distributed to the physicians in their locality.

Such a scheme as this might help somewhat. Through some such means pharmacy, although losing more and more ground professionally, may recover somewhat her former prestige and by adapting herself she will override many obstacles and mend the breaks occurring in her commercial and technical foundations.

A better understanding between the professions of medicines and pharmacy ought to be striven for and I would urge that both physicians and pharmacists owe to the public not merely the services which they are paid for, but that they owe the service due from superior knowledge to ignorance.

I would reiterate again that the best basis upon which to build a campaign with any great measure of success to follow is the training of the pharmacist of tomorrow in the highest branches of his art and instilling into him the highest ideals. He needs time for this and I would suggest even that a revolution should take place in the method of the present. Shorten the hours of labor and get away from the popular idea that a drug store is a place of public convenience. Why should the druggist of America make himself so cheap, and place himself at the beck and call of all on Sunday? It is not so in other countries and should not be necessary in this, but the druggist is alone to blame—he has made of himself a convenience. His store is open day and night to supply the demands of a too exacting public. Not to fill prescriptions, but to supply the late birds with

their cigars and sodas, etc., a good place to get stamps and information, and the recognized meeting place for those who have a date.

In this way the energies of himself and his staff are sapped and wasted. The midnight oil might be burned to better advantage. The time might be spent in study or if in nothing better than in healthful recreation.

The younger men, were things changed, might better themselves in many ways, becoming not mere department clerks, but proficient professional men.

In European countries the pharmacist has no such conditions to face and why should it be here in this land of freedom.

There the pharmacist can have his business done in an eight or ten-hour day and have his Sundays practically to himself. It only needs a beginning, a regular pull together to make it so here. Cut at the root of the matter and work from the bottom and in time such a propaganda as we are now discussing will become simply a memory. Use it meantime as a stepping stone towards the ideal and realize that there is more in true pharmacy than what we are now getting out of it; there is the professional pride, enthusiasm, mental growth, and inspiration which comes with increase of knowledge, and the broader view of life and its problems which knowledge alone can give.

SUICIDE BY DRINKING A SOLUTION OF SALT.

C. HEMAN BARLOW, GREENVILLE, MICH.

An editorial on "Poisoning from Common Salt" (The Journal, Oct. 5, 1912, p. 1297), speaks of the condition as a rare one. I wish to give my experience with several cases of fatal salt poisoning in China.

Throughout Chekiang Province, and probably in other provinces of China, the drinking of a saturated solution of salt is a common mode of committing suicide, and there is none more difficult to treat. In only one case did I succeed in securing recovery. Salt is taken for suicidal purposes sometimes in a common saturated solution made with water as the solvent, and sometimes in the brine from salted kraut.

Poisoning by salt usually presents a picture of high temperature and pulse, purging, vomiting and spasm. In the case in which I was successful in securing favorable results I washed the stomach with 2 quarts of a 1 percent. solution of silver nitrate, using a stomach-tube. The washings were chalky white at the start and were kept up till the solution coming away was just slightly white. Then warm tea was used till the stomach was thoroughly cleansed. Large amounts of tea were taken by mouth and a purge given. The patient was then removed to the hospital and made a good recovery. Although suicide is extremely common in this part of China the use of salt solution is not so common as suicide by other less painful methods. The amounts taken vary with the determination of the person taking it, but usually are from 1 to 3 rice bowlfuls—a pint to a pint and a half.—*Journ. A. M. A.*

Report on the Progress of Pharmacy

For the Year 1912

(Seventh Installment.)

Transmutation of Elements: Present Status.—Briefly reviewing the endeavors made to prove the possible transmutation of the elements, the "Pharmaceutische Zeitung" (Sept. 18, 1912) describes the present status of these investigations as follows: In 1907, Ramsay and Cameron made the surprising statement that they had succeeded in the conversion of copper into lithium. This statement was shortly thereafter proven by Madam Curie to be erroneous. It is now again asserted that these two scientists have succeeded in the transmutation of elements. Distilled water was placed in contact with a very small quantity of "Niton," with the result that beside the expected liberation of oxygen and hydrogen, "Helium" was also produced, and, furthermore, the lines of "Neon" were also recognized in the resulting gaseous mixture. These results are regarded by Ramsay and Cameron as indisputable proof of the transmutation of an element. Inasmuch, however, as these experiments were made with the element "Niton," but recently discovered by Ramsay and subjected to limited study only, the claim of the successful transmutation of an element should not be unconditionally accepted.—Pharm. Zeitung., LVII (1912), No. 75, 757.

Bismuth Carbonate: Improved Test for the Presence of Nitrates and Commercial Quality.—Walter Ryley Pratt has found a modification of the Sprengel process for determining nitrates in water to be well adapted and quite reliable for the estimation of nitrates in commercial bismuth carbonate. The method depends on the color reaction produced by sodium or ammonium nitrate with phenol-disulphonic acid in presence of sulphuric acid, due to the formation of a derivative of nitrophenol, and is equally effective for the quantitative estimation of soluble nitrate and of insoluble nitrate. The phenol-disulphonic acid used for the colorimetric assay was prepared by heating 3 gm. of pure phenol with 20 cc. of pure concentrated H_2SO_4 on a water-bath for six hours. The standard nitrate solution contained 0.7215 gm. pure potassium nitrate per litre (1 cc.—1/10 mgm. nitrogen), and with these reagents a series of shades were prepared from solutions containing respectively 1/100, 1/75, 1/50 mgm. of nitrogen. The samples of bismuth carbonate were then tested as follows: The bismuth carbonate was thoroughly triturated to break down aggregated masses, and 0.02 gram treated directly with the phenol-disulphonic acid. On the addition of ammonia, the bismuth was precipitated and filtered off. The filter-paper was washed with about 50 cc. of distilled water, the color being easily washed away from the precipitate. The filtrate was made up to 100 cc. in a Nessler cylinder and compared with the standard shades. Using a dilution of approximately 1/100 to 1/50 mgm. of nitrogen it was found that the shades could be easily and accurately matched. The amount of nitrogen present, expressed in milligrams, multiplied by the factor 102.14 gives the percentage of bismuth subnitrate present (calculating the total nitrate as $BiONO_3$). If the factor 19.29 is used, the result gives the percentage of nitrate as N_2O_5.

Of seventeen samples of bismuth carbonate examined only one showed a total absence of nitrates, two showed traces, while the others showed quantities varying from 1.15 to 3.27 percent., though only two of them exceeded 1.98%. The author considers his research shows that a limit of 2 percent. of total nitrate, calculated as $BiONO_3$, is generous, and that it can be readily and satisfactorily determined by the color-test modified as described. It seems curious that so many of the samples should contain sulphate, which no doubt comes from the sodium carbonate used in the manufacture. He states that more complete

washing would be a decided advantage, and that it would be advisable to insist on a limit of alkalinity, as one or two of the samples examined were decidedly impure in that respect.—Trans. Brit. Pharm. Conf., 1912; through Pharm. Journ. and Pharmacist, Aug. 3, 1912, 152.

Lead: Determination in Chemicals.—G. D. Elsdon directs attention to certain difficulties encountered in carrying out Warington's colorimetric test for lead and describes two processes which he has found satisfactory in the determination of lead in chemicals, either of which is reliable:

1. The required quantity of the chemical is dissolved in water, the solution filtered through an 11.0 cm. filter-paper, and the lead estimated in the filtrate in the usual manner. The filter-paper is then washed with five successive quantities of 10 cc. of 0.6 percent. acetic acid, the washings being mixed. The lead is then estimated in these washings by adding 3 cc. of saturated sulphuretted-hydrogen water, and comparing the color produced with standards (made with 0.6 percent. acetic acid) containing known amounts of lead. It is important that the comparisons be made with standards containing the same strength acid as that used for the washings. The lead so found added to the lead found in the original filtrate will give the total lead in the chemical.

2. The chemical is dissolved in water and 0.5 cc. of 60 percent acetic acid added for every 50 cc. of the solution; the solution is then filtered. The filtered solution is then made alkaline with ammonia, and the lead estimated as usual.—Trans. Brit. Pharm. Conf., 1912; through Pharm. Journ. and Pharmacist, Aug. 3, 1912; 143.

Methyl Alcohol: Expeditious Detection in Pharmaceutical Preparations.—Franz Lőrinsch proposes the following simple and quick method for the detection of methyl alcohol in pharmaceutical preparations, such as spirits, fluidextracts, tinctures, etc. Having eliminated iodine, if present, by decolorization with thiosulphate, or free ammonia by acidulation with sulphuric acid the preparation is subjected to distillation. To 1 cc. of the distillate 1 cc. of 25% diluted sulphuric acid and 8 cc. of 1/10 N potassium permanganate solution are added, the mixture allowed to stand about 10 minutes, and filtered; 2 cc. of the filtrate is then mixed with 1 cc. of a 3 percent. solution of iron albuminate, and 2 cc. of concentrated sulphuric acid is carefully added, whereupon an intense-violet colored ring is developed at the zone of contact of the two liquids due to the presence of formaldehyde produced from methyl alcohol contained in the preparation under examination. In this test the albuminate of iron may be replaced by 1 cc. of a mixture of equal parts of milk and water to which 1 drop of solution of ferric chloride has been added.—Ztschr. d. Allgem. Oesterr. Apoth. Ver., 1912, No. 35.

Methyl Alcohol: Toxicity.—In a paper read before the British Pharmaceutical Conference, Thomas Tyrer and F. C. Gosling observe that the toxicity of methyl alcohol is now placed beyond doubt. Attempts to ascribe the toxic quality to other constituents of commercial methyl alcohol and wood naphtha have failed, and there is no doubt that methyl alcohol is itself toxic.—Trans. Brit. Pharm. Conf., 1912; through Pharm. Journ. and Pharmacist, Aug. 3, 1912, 128.

Formaldehyde: Examination of Commercial Solutions and Tablets.—In a paper read before the British Pharmaceutical Conference, 1912, C. H. Hampshire and S. Furnival report the results of examination of eleven commercial samples of formaldehyde solution and eighteen samples of tablets and describe the methods employed for the determination of their constituents. The *specific gravity* at 15.5° C. of the solutions varied from 1.0804 to 1.0886. The *formaldehyde* content, which was determined by the method of Lemme and adopted in the G. P., ranged from 35.38 to 37.33 percent. by weight. The *methyl alcohol* content, as determined by the method of Blank and Finkenheimer, varied from 10.16 to 17.22 percent. by weight; the *acidity*, calculated as formic acid, varied from 0.043 to 0.085 percent.; the *ash*, determined by evaporation and subsequent ignition in platinum, was exceedingly small, ranging from 0.0029 to 0.048 percent., with only traces in two cases, and none at all in two others. The method of the "Codex" for detecting the presence of *acetone*, proved unsatisfactory; but by a method of their own devise, which enabled the detection of as little as 0.2 percent., none of the samples gave indications of more than a trace, and in one case it was entirely absent. Regarding the formaldehyde tablets, the results show that

many of the tablets on the market contain much less formaldehyde than is required by the formula of the B. P. Codex.—Trans. Brit. Pharm. Conf., 1912; through Pharm. Journ. and Pharmacist, Aug. 3, 1912, 133.

Commercial Formates: Revision of the Formulas Given in the B. P. Codex.—Asked to supply sodium formate answering the requirements of the B. P. Codex, Thomas Tyrer and F. C. Gosling found the article in stock to be in well-defined prismatic crystals containing two molecules of water of crystallization, instead of one as stated in that work. The authors were unable to prepare *Sodium Formate* containing only 1 molecule of water, and recommend, in accordance with their experience and the variation in water content of six commercial samples, from nil to 36%, that the formula should be amended to 2 molecules of water for the true crystallized salt. ($NaCHO_2.2H_2O$).

Other chemical formulas for formates were also investigated and the corrections made, as shown in the following summary:

	B. P. C. Formula
Sodium Formate	$NaCHO_2.H_2O$
Potassium Formate	$KCHO_2$
Lithium Formate	$LiHCO_2H_2O$
Calcium Formate	$Ca(CHO_2)_2$
Ferric Formate	$FeC_6H_6O_{12}.H_2O$
Ferrous Formate	$Fe(CHOO)_2$

	Established Formula
Sodium Formate	$NaCHO_2.2H_2O$
Potassium Formate	$KCHO_2$
Lithium Formate	$LiHCO_2.H_2O$
Calcium Formate	$CaC_2H_2O_4$
Ferric Formate	$Fe_2(CHO_2)_6$
Ferrous Formate	$Fe(CHO_2)_2.2H_2O$

—Trans. Brit. Pharm. Conf., 1912; through Pharm. Journ. and Pharmacist, Aug. 3, 1912, 157.

Calcium Lactate: Method of Preparing a Pure Salt.—The experiments of C. A. Hill and T. T. Cocking demonstrate that calcium lactate is liable to vary in composition according to the method of preparation, varying particularly in the amount of water of crystallization. It may be neutral or contain either lactic acid, calcium hydroxide, or calcium carbonate. Pure calcium lactate is readily prepared by precipitation of its cold saturated solution with acetone, washing the precipitate with acetone and then with ether. A product thus prepared was neutral to phenolphthalein, and contained 70.07 per cent. of anhydrous calcium lactate calculated on the yield of 0.1394 gram of calcium sulphate from 0.3187 gram of the substance. The proportion of anhydrous calcium lactate calculated for the pentahydrated salt is 70.78 per cent. Regarding the solubility of calcium lactate, the authors have been unable to confirm the oft-repeated statements that the salt becomes insoluble with age. The widely divergent statements made in regard to its solubility do not appear capable of explanation on the ground that they were possibly made at different temperatures or with salts of varying hydration. In determining the solubility of calcium lactate care must be taken that the temperature does not rise above the point for which the observation is to be recorded, since solutions of calcium lactate appear to exhibit supersaturation in a marked degree. Experiments made by a method described, giving very concordant results, show the mean solubility of the hydrated salt ($CaC_6H_{10}O_6,5H_2O$) to be as follows: At O°C, 1 in 32; at 15°C, 1 in 18½, and at 30°C, 1 part of salt in 12½ parts of water.

The authors recommend the salt to be made official (B. P.) should be the hydrate $CaC_6H_{10}O_6,5H_2O$; that it be required to be neutral, or very slightly acid with a limit of acidity stated; and that it be required to yield upon treatment with sulphuric acid, ignition, further treatment with sulphuric acid and reignition, not less than 41 or more than 45 per cent. of its own weight of calcium sulphate. Limits of lead and of Arsenic should also be introduced.—Trans. Brit. Pharm. Conf., 1912; through Pharm. Journ. and Pharmacist, Aug. 3, 1912, 155.

Alkaloids: General Method for Their Determination in Drugs.—Felix Daels describes the following general method for the determination of alkaloids in drugs: To 10 gm. of the dry powdered drug in a 400 cc. flask, add 200 cc. of chloroform, followed by 50 cc. of a 2 percent. solution of NaOH. Weigh the flask and contents, boil half an hour under a reflex condenser, allow to cool, and restore the original weight with chloroform. Then filter off 150 cc. of the chloroform solution through kieselguhr, shake the filtrate with 150 cc of acid solution of known titre, and filter (the acid solution?: Rep.) again through

kieselguhr, collecting 100 cc. This represents, in addition to the alkaloid from 5 gm. of the powdered drug, a quantity of sodium hydroxide corresponding to 0.4 cc. of a 1/10 N.NaOH solution, which must be included in the calculation. The acid solution is titrated with 1/10 N.NaOH solution, using hæmatoxylin as indicator, and the values found, after deducting 0.4 cc., are calculated in the usual way. The author mentions some slight deviation from this general process which he has found expedient in the assay of several drugs: Cinchona, Ipecacuanha, Nux Vomica, Hyoscyamus, Aconite, and Belladonna.—Jour. de Pharm d'Anvers, 1912, No. 14 .

Indicators of the G. P. V.: Review of Their Chemistry and Uses.—Eugen Nickel contributes a review of the chemical characters and uses of the indicators directed in the G. P. V. These are considered according to origin under three heads, vegetable, inorganic-chemical, and organic-chemical compounds, embracing under the first head: Litmus, starch and hæmatoxylin; under the second: Potassium chromate, ferriammonium sulphate, and potassium iodide; and under the third: Phenolphthalein, iodeosin, and dimethylaminoazobenzol. The details must be consulted in the original, in Pharm. Ztg., LII (1912), No. 60, 696-697.

Phenolphthalein: Influence of Alcohol and Some Neutral Salts on End-Reactions.—E. Lenk and J. Monschein find that if ammonium chloride is added to a weak solution containing phenolphthalein, the red color disappears and more alkali must be added in proportion to the amount of water present. If, however, alcohol is added, much more alkali will be necessary; as more alcohol or water is added, the effect of the latter is seen to be greater to an increasing extent. In some of the cases recorded the amount of alkali required was thirty times as much when alcohol was added as when an equal volume of water was employed. Ammonium chloride may be replaced by magnesium sulphate or some other salts.—Chem. Ztg. May 11, 1912, p. 534.

Colchicine: Reactions.—According to C. Reichard's investigations colchicine is an alkaloid possessing but feeble reactionary properties. It is, however, distinguished from the prepondering majority of alkaloids, independent of its distinctive color, that it is capable of crystallizing from its chloroformic solution in chemical combination with its solvent, and that its behavior towards reducing agents of all kinds is perfectly negative. An extremely characteristic property is the formation of a lemon-yellow solution in concentrated sulphuric acid, which is permanent on dilution with water, and the peculiar odor reminding of honey and wax which is manifested when even very small quantities are used. Colchicine is furthermore identified by its behavior to nickel sulphate, and particularly to the rainbow color display of a mixture of colchicine, water, and mercuric chloride.—Südd. Apoth. Ztg., 1912, No. 73.

Hyoscine Hydrobromide: Commercial Variation.—Experiments reported to the Brit. Pharmaceutical Conference, 1912, by H. Finnemore and Dorothy Braithwaite point to the necessity of pharmacists for care in the examination of their stock of hyoscine hydrobromide. An examination of six commercial samples showed that only four of them approximate in character to the pure laevorotatory compound.—Trans. Brit. Pharm. Conf., 1912; through Pharm. Journ. and Pharmacist, Aug. 3, 1912, 136.

Pilocarpine: Detection in Presence of Quinine.—M. G. Meillère takes advantage of the solubility of quinine chromate and insolubility of pilocarpine chromate in chloroform, for the detection of pilocarpine in ointments, hair dressings, etc., containing both alkaloids. The faintly acidulated solution of alkaloids is treated with potassium dichromate as long as a precipitate forms, and then extracted with chloroform as long as this becomes colored. On the addition of chloroform and oxygenated water (=Solution of Hydrogen Dioxide) to the residual liquid, the characteristic color reaction of pilocarpine manifests itself if present. The quinine is detected in the chloroform solution after eliminating the chromic acid with ammonia.—Journ. de Pharm. et Chem., 1912, No. 3.

Anhydrous Crystalline Quinine: Production.—J. Ville describes a rapid and easy method for the production of anhydrous quinine in a crystalline state. A current of air charged with ammonia is driven through an aqueous solution of quinine hydrobromide heated on a boiling water-bath, and kept at that temperature during the whole operation. The quinine is thus precipitated in white,

crystalline lamellæ, which when washed and pressed between porous plates contain no water of crystallization. It melts at 172°-173°, and on cooling becomes a crystalline mass of fine needles.

Quinine Trihydrate is obtained by the author by allowing an aqueous 2.5 percent solution of quinine hydrobromide, treated with half its volume of acetone and made alkaline to very slight opalescence with ammonia, to evaporate spontaneously in a crystallizing dish covered with a funnel.—Bull. Soc. Chem. de France, April 20, 1912, 398.

Strychnine: Modification of the B. P. Test for Brucine.—In the British, and in most of the other pharmacopœias, the test for brucine in strychnine is to pour nitric acid on the crystals and to observe whether any red coloration is produced. D. B. Dott says that this test is unsatisfactory inasmuch as it is difficult to properly observe or define a transient tint which quickly changes to a darker color, caused by the rapid action of the strong nitric acid on the strychnine, and suggests the following modification of the test: Dissolve 0.05 gm. of the powdered strychnine in 4 cc. of a mixture of equal volumes of nitric acid and water, at the ordinary temperature; the color of the solution, after five minutes, should be purely yellow, showing no red or orange tinge.—Trans. Brit. Pharm. Conf., 1912; through Pharm. Journ. and Pharmacist, Aug. 3, 1912, 144.

Santonin: Manufacture in Turkestan.—From an interesting article on the production of santonin in Turkestan, which appears in "Westnik finanzow" (1912, No. 88), it appears that the manufacture of this important vermifuge is confined practically to Turkestan, where extensive manufacturing plants have been established since the Russians have taken possession; and since the habitat of the plant (*Artemisia cina*), from which it is prepared, is restricted to a small territory of the earth's surface, and confined to Russian Turkestan, the supply of material has become a Russian monopoly and, in consequence, that of the product also. While the plant grows only within narrow limits on the left bank of the Syr-Darja it grows profusely on the right bank of this river, extending over the entire plain, between the large and small streams, up to the Altai range of mountains. Most of this land, which is inhabited by the nomad Kirgise, has been acquired by the Russian crown and is rented out on certain terms covering the exclusive right to collect the flowers. During the harvest of the flowers, which is confined to a very brief period (usually between the 15th or 20th of August, and the 1st or 5th of September), the manufacturers open storage-centers, for the reception of the crop, which are again closed at the end of the harvest, and the collection requires the watchful care of a large number of employes, since the flower must be collected at the proper period of development —the santonin-content being greatest when just opening. The average yield of flowers is estimated at 50 to 60 thousand puds (1 pud =16.375 kilograms, Rep.), but in some years is as low as 40,000 puds, of which a large portion is exported. The manufacture begins immediately after the harvest, the average yield of santonin (more or less crude) being 1 part from 150 parts of flowers. The produce, which is mainly exported to Germany, is about 400 puds, but occasionally has been as high as 1500 puds. The refuse material (dregs) is used as fuel after drying and forming into "briquets."—Pharm. Ztg., LVII (1912), No. 77, 778.

Strophanthus Glucoside: Comparative Investigation.—A. Heffter and F. Sachs have determined by a comprehensive investigation of the strophanthus glucosides that the amorphous strophanthin of *Strophanthus hispidus* closely resembles the strophanthin of *S. kombe*, both in its physiological activity and in chemical character. Besides this amorphous strophanthin, however, the Kombé seeds contain a crystalline strophanthin. While the gratus-strophanthin of Thoms is only slightly bitter, the others mentioned are all markedly bitter. Crystalline kombé-strophanthin alone has the property, in a slight degree, of disintegrating the red blood corpuscles. Its toxicity on rabbits is very close to that of the amorphous glucoside, and less than that of gratus-strophanthin, but there appears to be very little difference in its action on the human subject from the amorphous glucoside with which it is associated.—Pharm. Journ. and Pharmacist, Aug. 24, 1912, 271.

Proteolytic Ferments: Action of Light.—The action of both visible and ultra-violet rays of light has been tried by H. Agulhon on yeast-sucrase, maltamylase, pancreatic

amylase, emulsin, pepsin, rennet-ferment, catalase, tyrosinase, and malt peroxidiastase. He finds that ultra-violet rays not only destroy micro-organisms, but they rapidly destroy all the ferments named, provided these are present in media which are permeable to the rays. Sucrase, laccase, and tyrosinase are only attacked by visible light rays in presence of active oxygen, and are less rapidly destroyed by ultra-violet rays in the absence of that element. Emulsin and catalase are decomposed *in vacuo,* by all light rays, but less actively without than in the presence of oxygen. Rennet-ferment is unaffected by ordinary light, but is destroyed by ultra-violet rays with equal rapidity in presence of oxygen and *in vacuo.*—Annales de Pasteur, 26 (1912), 38 .

Amygdonitrile Glucoside: *Isolation from Leaves of Photinia Serrulata.*—In 1906 Guignard examined the leaves and other parts of *Photinia serrulata* with reference to the considerable amounts of hydrocyanic acid they yield on distillation. H. Herissey has now isolated the cyanogenetic glucoside by submitting the fresh leaves to the process of Bourquelot. It proves to be amygdonitrile glucoside. This is the third instance that this glucoside has been found in plants—first, by the author in *Cerasus padus;* then by Power and Moore in *Prunus serotina;* and, thirdly, as above. Possibly prulaurasin or some other glucosides are present as well.—Journ. de Pharm. et Chem., 1912 (5), 574.

Emulsin: *Reversible Reaction.*—Seven years ago Visser found that when emulsin was allowed to react, in an aqueous medium, with saligenin and glucose, a product was formed which was regarded as almost certainly salicin, although its identity was not fully established. E. Bourquelot and M. Bridel, having now shown that emulsin, in the presence of alcohol 85 percent. is capable of hydrolizing 54 percent. of any salicin in solution, it was considered probable that the reverse action in the same medium would give a better yield than water, as in Visser's experiment. This was found to be a fact, and the optical deviation attained in fourteen days was in accordance with theory. On removing the alcohol, and evaporating the residue with water-saturated acetic ether, a method which was found capable of removing salicin from a mixture of saligenin and glucose, a glucoside was dissolved out. It was not salicin, however. It was a transparent amorphous hard mass, without a trace of crystalline structure, very soluble in water; aD—30°02; not reducing Fehling's reagent; rapidly hydrolyzed by emulsin without regenerating saligenin. It has not yet been definitely identified, but the above characters are those of Koenig and Knorr's B-ethyl glucoside. In any case, it is established that emulsin is capable of a reversible activity, and to a greater degree than has hitherto been considered possible.—Compt. rend., 154 (1912), 1375.

Volatile Oils: *Variability of Optical Rotation.*—Rob. Frey contributes some interesting memoranda concerning the variability of the optical rotation of volatile oils mentioned in the G. P. V., among the constants serving for their valuation. The optical rotation is influenced by a variety of causes, such as the conditions of development of the plant, the method of production, fractionation, age, etc., so that some of the oils may vary within considerable limits from dextro- to laevorotation. In the case of turpentine oils, for example this variation may be from 15° to 40°, a difference of 55° in the specific rotation. An examination of a number of conifer-oils in a 94.7 mm. tube showed the following average optical rotatory constants: Ol. terebinthin. rectificat., 2.5°; ol. terebinthin. Gallic, —6.5°; Ol. Pini (Kienöl), 14.9°; Ol. Pini silvestris (pine-needle oil), —19.2°; Ol. Pini pumilionis, —7.2°. By judicious admixture it becomes quite possible to make an optically inactive product from dextro and laevorotatory turpentine oils, or to produce mixtures having the desired intermediate degrees of optical rotation. Again, it has been shown that by fractionation, American turpentine oil will yield fractions having according to the temperature of distillations the specific rotations of 14.61°, —0.36° and —13.17°, while similarly French oil of turpentine yields fractions of —42.2° and 18.34°, and the oils from the oleoresins of pine and of fir yield fractions between 155° and 160°, showing the rotations of 20.2° and —7.9°, respectively.—Pharm. Ztg., LVII (1912), No. 78, 785.

Cubebs: *Method of Identification.*—Confirming the observation of Umney and Potter that cubebs offered on the market, particularly such imported via London, have recently

been frequently sophisticated with different sorts of pepper-fruits, Caeser & Loretz state that they have recently met with a consignment containing scarcely any genuine cubebs but large quantities of *Piper nigrum*. They confirm furthermore the statement of Umney and Potter that the fruits used for sophisticating cubebs are difficult to distinguish in their externals from the genuine fruits, but they have resorted with advantage to the sulphuric acid test, which is carried out as follows: The fruit is triturated in a small mortar to fine powder, the powder transferred to a small, plain filter (4 cm. diameter), and 1 or 2 cc. of ether is poured upon the powder. The filtrate is collected in a small porcelain dish, allowed to evaporate spontaneously, 1 or 2 drops of sulphuric acid are added to the residue and the two are stirred together with a glass rod. A handsome purple-red color is developed and this is intensified if 1 or 2 cc. of ether is poured upon it and evaporated by moving the dish to and fro on the hand. False cubebs subjected to this test give a dirty brown color. The test should be carried out simultaneously with several fruits of different appearance.—Pharm. Ztg., LVII (1912), No. 84, 845.

Medicinal Mixtures: Potential Increase of Activity.—Dr. J. Abelin observes that the pharmacological activity of medicinal mixtures has during recent years formed the frequent subject of scientific study. He says it is a well-recognized fact that two medicaments, administered together, will under circumstances exert a much more potent effect than either of them by itself in corresponding doses. In surgical practice, also, it has been experienced that by the judicious combination of two narcotics a better and more lasting narcosis is produced than is possible by the use of one of the narcotics by itself. Moreover, a dose of a medicament which by itself is ineffective, may acquire pronounced potency by the addition of insignificant quantities of a second substance which, given by itself, would be without any effect whatever. Another important observation is the increased potency acquired by a medicament when it is administered in broken doses, as for example when morphine is given in small, subdivided doses at short intervals, by which a stronger and more lasting narcosis is produced than when the entire dose is given at once. The author gives numerous examples, quoting the experience of a number of investigators—Schneiderlin, Krawkow, Führer, Bürgi, Blessing, and others—and sums up the results of his review in the following sentences:

Increased potency of activity may be expected by the combination of two medicaments: (1) When both medicaments belong to different pharmacologic-chemical groups; (2) when to the dose of a medicament, ineffective by itself, a very small quantity of some other corresponding medicament is added; and (3) when the stated dose of a medicament is given in divided portions at short intervals.—Pharm. Ztg., LVII (1912), No. 79, 796.

Fruit Juices: Utilization of Garden Fruits to Make Palatable Wines.—P. Carles directs attention to the statement that during ordinary seasons in France 20,000,000 kilos of cherries are absolutely wasted, and in good years as much as 50,000,000 kilos. This loss is mainly due to difficulties of transport between rural districts and towns. If this fruit could be fermented, a wholesome beverage might be obtained. The reason that palatable "Wines" cannot be made from cherries and other garden fruits is stated to be due to their deficiency in tartaric acid. The author says if this is added in such proportions as to bring the total acidity of the juice to the equivalent of 7 to 9 gm. of tartaric acid to the liter, fermentation will proceed normally, regularly, and completely, as in the case of wine made from grapes. All that is necessary is a preliminary titration of the fruit juice and the addition of the requisite amount of acid. As fermentation proceeds, the potash salts present in the juice, having combined with the acid to form potassium acid tartarate, are precipitated precisely as occurs when grape juice is fermented.—Report de Pharm., 24 (1912), 241.

Syrup of Raspberry: Amyl-Alcohol Test for Tar Colors.—E. Schroedter's experience supports the statement that the G. P. V. test for the absence of tar colors in syrup of raspberry is liable to be misleading, since amylalcohol is apt to take up the natural coloring matter of the fruit, particularly when the berries have ripened well and have a deep red color. It is true that the color so imparted to the alcohol is comparatively faint, pale

rose-red, but its occurrence may be misinterpreted unless it is distinctly understood that the amylalcohol separating slowly after vigorous shaking with the syrup must be decidedly red to indicate the presence of a tar-pigment. A simple and reliable test for the latter consists in dyeing a woolen thread, previously saturated with sodium acetate solution, in the syrup.—Pharm. Ztg., LVII (1912), No. 72, 728.

Liq. Kali Arsenicosi, G. P. V.: Advantage of Using Monocarbonate in Place of Bicarbonate of Potassium.—Hero Krüer observes that the combination of arsenous acid and potassium bicarbonate is not effected at the temperature of boiling water, a temperature of 102° being required, and that by the foaming produced by the evolution of CO_2 portions of the arsenous acid are carried to the upper portions of the reagent glass, where it adheres persistently and is difficult to remove. If the bicarbonate (1.0) is replaced by monocarbonate (0.7), the required temperature is quickly reached and the frothing is practically avoided.—Pharm. Ztg., LVIII (1912), No. 78, 786.

Cellophan: A New Cellulose Product for Impervious Paper.—In "Les Nouv. Remédes" (No. 15, 1912), a new cellulose product is described under the name of "Cellophan," which is prepared in the bleachery at Thaon-Vosges by dissolving cellulose, reprecipitating it, and then subjecting the precipitate to treatment similar to that employed in paper-making, by which it is obtained in form of transparent and very stable sheets of 14/100 mm. thickness and upward. These sheets are odorless and tasteless, swell up when immersed in water, and burn like ordinary paper without exploding. It is not affected by alcohol, ether, chloroform, iodine, or volatile and fixed oils, but is attacked somewhat by alkalies. It is superior to parchment paper as a filtering medium for bacteria and as a dializing membrane. By boiling water, hydrogen dioxide, and corrosive sublimate it may be sterilized, and thus becomes useful as a substitute for the more expensive materials usually employed for the protection of surgical appliances, and bandages, as well as a protective wrapper, replacing economically gauze, caoutchouc, parchment paper, and tin-foil usually employed for medicines, food products, etc., or for one or the other of these purposes. The new material may be colored, pressed into any desirable shape, and readily receives imprints.—Pharm. Ztg., LVII (1912), No. 75, 758.

PROGRESS OF THE METRIC SYSTEM.

M. Charles Edouad Guillaume, Director of the International Bureau of Weights and Measures, recently communicated an interesting paper on the "Evolution of the Metric System," to the Société de Phisque. He noted that the system is now obligatory in the Argentine, Austria-Hungary, Belgium, Brazil, Bulgaria, Chili, Columbia, Cuba, Denmark, France, Germany, Guatemala, Holland, Italy, Luxemburg, Mexico, Montenegro, Norway, Peru, Portugal, Roumania, Servia, Spain, Sweden, Uruguay, and the Central Mexican republics. In Bolivia, Egypt, Great Britain and Ireland, Greece, Japan, Paraguay, Russia, Siam, Turkey, Venezuela, and the United States it is optional only. But it appears probable that Greece and Siam will shortly declare its use obligatory, and in the United States legal units of existing weights and measures are defined by their relation to metric units, and not by the British Imperial standards. The fundamental units defined by the 1889 Convention, at which twenty states were officially represented, were those of length, time and mass. The two former are clear enough, but the kilogram is frequently supposed to be a unit of weight, whereas ever since its introduction in 1799 it has never been really considered anything but a mass unit. In view of the feeble but appreciable difference between the volume of a kilogram of water and a cubic decimetre, a distinction is made between the latter and the litre. A litre, according to the most up-to-date authorities, contains 27/1,000,000 (twenty-seven millionths) more than a cubic decimetre.—*The Chemist and Druggist.*

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JAMES H. BEAL, Editor.....Scio, O.

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The Pharmacist and the Law

ABSTRACT OF LEGAL DECISIONS.

SALE OF POISON—EVIDENCE.—Action was brought against a druggist for the death of a boy, which it was claimed resulted from the substitution of bichloride of mercury for calomel. The defendant claimed that the boy died of typhoid fever. In the trial court verdict and judgment were given for the defendant. On appeal it was held that an instruction that if the boy had typhoid fever, but the jury believed that bichloride of mercury was administered to him, and that the poison caused or brought on his death, they should find for the plaintiff, substantially covered a request by the plaintiff to charge that, if the boy died of the combined effects of the disease and the poison, the plaintiff was entitled to recover. A physician testified that bichloride of mercury given to a typhoid patient would retard his recovery, and that in his opinion 2½ grains of that drug given to a typhoid patient would cause gastritis and gastric trouble, which would weaken the patient and cause symptoms of poison if taken inwardly. It was held that an answer to the direct question, "Would it aid the disease in killing the patient?" was properly excluded. The correct line of testimony was to develop the effect of the poison upon one who had typhoid fever. A pharmacist was permitted to bring into court samples of calomel and bichloride of mercury together with the reagent potassium iodide. An objection that the bichloride of mercury was in crytal form, and not in the powdered form like that sold by the druggist, and that the pharmacist was allowed to pulverize it before applying the reagent, was not sustained. Judgment for the defendant was affirmed.

Mann's Adm. v. Reynolds, Kentucky Court of Appeals, 150 *S. W.* 329.

SALES OF POISONS—INDICTMENT.—The West Virginia statute, Acts of 1911, chapter 16, makes it a felony to sell cocaine except on the prescription of a licensed physician. It was held that an indictment for selling cocaine under the act was defective because it did not aver that the sale was without the prescription of a physician. The defendant, it was said, may have had a prescription authorizing sale. The offense is not merely selling, but selling without a prescription; therefore the exception was a part of the definition of the crime and must be negatived.

State v. Weir, West Virginia Supreme Court of Appeals, 76 *S. E.* 138.

MANUFACTURING CHEMIST'S LIABILITY.—Action was brought against a firm of manufacturing chemists for the death of two horses alleged to have been caused by an intravenous injection of a solution of nuclein manufactured by the defendant, and prescribed by a veterinary surgeon employed by the plaintiff. There was nothing more to connect the defendant with the loss than an advertising circular of the remedy addressed to veterinarians, stating that it was intended especially for hypodermic use, and referring generally to a magazine article written by a reputable veterinarian describing his use of the preparation intravenously as well as hypodermically. An offer to show that the defendant subsequently changed the formula

by reducing the percentage of nuclein contained therein was held properly rejected.

Young v. Parke, Davis & Co., 49 *Va. Superior Court*, 29.

PURE FOOD LAW—CONFECTIONERY A FOOD.—In a prosecution for selling confectionery containing sulphur dioxide in violation of the Pennsylvania Pure Food Law, Act of May 13, (P. L. 520) it was held that the title of the act, "An act relating to food, defining food, providing for the protection of the public health and the prevention of fraud and deception by prohibiting the manufacture or sale, the offering for sale or exposing for sale, or having in possession with intent to sell of adulterated, misbranded or deleterious foods," etc., is sufficiently comprehensive to give notice of the prohibition against adding sulphur dioxide to confectionery. The word "food," it was said, is a general term, and applies to all that is eaten for the nourishment of the body, including any substance that is taken into the body which serves, through organic action, to build up normal structures or supply the waste of tissue; it includes candy, sweetmeats, preserves and other confectionery. The fact that the statute provides that sulphur dioxide may be used in quantities not detrimental to health in the preparation of dried fruits and molasses was held not to render it a violation of the Constitution as an improper discrimination. Nor is the act unconstitutional because it relieves retail dealers from prosecution where they sell under a guaranty signed by the manufacturer or wholesale dealer. A conviction may be obtained under the statute where it appears that the sulphur dioxide was added to gelatin in the bleaching process, and the gelatin was then added to other constituents to compose the confectionery which the defendant sold.

Commonwealth v. Pflaum, Pennsylvania Supreme Court, 84 *Atl.* 842.

MISBRANDING CHAMPAGNE.—In a prosecution for violating the Pure Food and Drugs Act, it was held that an indictment for misbranding champagne in violation of the Act was not invalid because of failure to allege a preliminary investigation by an officer of the Department of Agriculture, a notice to the defendants of their violation of the act, or that the defendants were afforded an offer to present evidence and be heard. Where there was evidence tending to show that the defendants sold in interstate commerce a domestic wine, artificially carbonated, under a label "Extra Dry Champagne," with words in French and a design calculated to induce a purchaser to believe he was buying a foreign and not a domestic product, it was held that they were guilty of misbranding in violation of the act.

Schraubstadter v. United States, Circuit Court of Appeals, 199 *Fed.* 568.

OLEOMARGARINE — LICENSE TAX—"MANUFACTURER."—In a prosecution under the Oleomargarine Act of 1886 for manufacturing oleomargarine without having paid the special tax therefor, it was held that the essential elements of the offense are the engaging in the business of manufacturing oleomargarine, the producing of such substance, and the attempt to defraud the United States, and an indictment alleging that defendants on a certain date, being persons engaged in carrying on the business of a manufacturer of colored oleomargarine at a specified place, did knowingly, etc., attempt to defraud the United States of a tax imposed on 120 pounds of colored oleomargarine, then and there produced by them, etc., was sufficient, without alleging its sale or removal for consumption. The statute does not declare it an offense to commit the fraud in any particular way, hence an indictment does not require to charge the manner in which the attempt was made. The statute was held to be applicable to one who did not manufacture white oleomargarine, and therefore was not a manufacturer within the definition contained in the original act, but who mixed white oleomargarine with artificial coloration so as to make it look like butter and thereby became a "manufacturer" within the definition as extended by the Act of May 9, 1902.

May v. U. S., Circuit Court of Appeals, 199 *Fed.* 42.

RESCISSION OF ORDER.—In an action for an alleged breach of contract for the sale of soda fountain, an order was given to the traveling salesman of the defendant, with a deposit of $25.00 for a fountain at the price of $300.00. The order expressly provided that it was subject to the approval of the home office. On receipt of it the defendant refused to accept it for several reasons, among others, that the price should have

been $350.00. The plaintiff refused to sign an order submitted to him at $350.00 and asked for the return of his deposit, which was made. Judgment for the plaintiff was reversed for the following reasons. The order providing in express terms that it was subject to the approval of the home office, it did not become a binding contract until it was approved and accepted. Where the person making such an order, upon being notified of its non-acceptance, demands and receives a repayment of the money forwarded therewith, he thereby rescinds his order, and cannot maintain an action thereon for damages for its non-acceptance.

Crowder v. Tolerton & Warfield Co., Nebraska Supreme Court, 138 *U. W.,* 151.

VERBAL REPRESENTATIONS EXCLUDED.—The purchaser of a soda fountain brought an action for breach of warranty after having kept the fountain for several months. He claimed that it did not come up to specifications, and charged that the carbonator was not of the kind described, and that the trimmings of the counter were white instead of green. The written contract contained the stipulation, "the sole authorized business of our agents is to solicit contracts on this printed form, and no agreement or representation will be recognized by us unless it is written hereon." It appeared that the purchaser rested his principal grievance, not on the ground that the carbonator differed from the specifications of the contract, but that it did not come up to certain verbal assurances of the seller's agent. It was held that such verbal assurances constituted no part of the contract, and could not be considered in an action for its breach. On the question of the trimmings, the evidence as to pecuniary injury was held too indefinite to be made the basis of any substantial recovery.

Simpson v. R. M. Green & Sons, North Carolina Supreme Court, 76 *S. E.* 237.

INTOXICATING LIQUORS—MANAGING DIRECTOR'S LIABILITY.—In a prosecution for maintaining a place where intoxicating liquors were illegally sold, bartered or given away, it was held that the fact that the defendant was a member of a corporation owning and operating certain drug stores where liquor was illegally sold, and that he assisted in directing the policies of each store, in naming their clerks and assistants and received a share of the profits therefrom made him subject to prosecution and conviction.

Rigrish v. State, Indiana Supreme Court, 99 *U. E.* 786.

INTOXICATING LIQUORS — EVIDENCE.—The South Dakota Political Code §2860, as amended, provides that it shall be unlawful for any registered pharmacist to sell or give away any intoxicating liquors whatever to be used as a beverage or drunk on the premises, and that any registered pharmacist who shall allow intoxicating liquors to be drunk upon the premises or in any room adjoining the premises, shall be fined on conviction. In a prosecution for violation of the statute it is held that the statute forbids the selling or giving of intoxicating liquors to be drunk as a beverage anywhere by a registered pharmacist, and also the selling or giving of such liquors to be drunk on the premises, as a beverage or otherwise. Under an information charging an illegal sale of intoxicating liquors to several persons jointly, the defendant, it was held, cannot be convicted of an illegal sale to but one of the persons named. A witness testified positively on his own personal knowledge to purchasing beer from the defendant, a registered pharmacist, to be drunk on the premises. The witness was contradicted by two other witnesses for the state, and his credibility was attacked by three apparently disinterested citizens. It was held that, while the appeal court might not find upon the evidence that the liquor was beer, it could not disturb a verdict of guilty, the jury being at liberty to believe the witness, notwithstanding his contradiction and impeachment.

State v. Julius, South Dakota Supreme Court, 137 *U. W.,* 590.

EJECTING A TENANT BY MEANS OF FORMALDEHYDE.—After an abortive attempt had been made by a landlord to regain possession of leased premises, the lessee, with a number of his employes, remained in the building during the night. In order to eject them the landlord caused a hole to be bored in the wall of the room where the lessee and his employes were dozing, and with the aid of a bicycle pump, injected about two quarts of liquid formaldehyde into the room. In an action for injuries the lessee claimed that, as a result of inhaling the poisonous gas, he became afflicted with an acute inflammation of the

throat and eyes, which after some days assumed a chronic condition. It was held that the landlord was liable for all damages resulting from his act.

Saros v. Avenue Theatre Co., Michigan Supreme Court, 137 *U. W.* 559.

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ABSTRACT OF U. S. TREASURY DECISIONS.

(T. D. 32950.) DRIED MINT.—In view of the decisions of the Board of United States General Appraisers, reported in G. A. 4292 (T. D. 20208), G. A. 5266 (T. A. 24173), Abstracts 23177 and 23178 (T. D. 30585), and Abstract 26276 (T. D. 31813), wherein it was held that crude thyme, marjoram and savory were entitled to admission free of duty as crude drugs under paragraph 559 of the tariff act, the treasury department is of opinion that dried mint in bottles is also entitled to admission free of duty as a crude drug under the said paragraph, the bottles being dutiable at the appropriate rate provided in paragraph 97 of the said act.

(T. D. 32965.) FRUIT ETHERS.—Merchandise known as "Sinalco Seele," made by a secret process, and used as a base for the manufacture of non-alcoholic drinks was classified for dutiable purposes as "fruit ethers, oils or essences" under paragraph 21 of the tariff act of 1909. The importers claimed that it should be classified as a "non-enumerated manufactured article" under paragraph 480 of the act. The Government claimed it to be dutiable as an alcoholic compound under paragraph 2 of the act. It was held that, the merchandise being, as imported, composed of 17.6 percent. of alcohol and 1.7 percent. of extract, the balance water, and the extract having a fruit aroma, it fell within paragraph 2 as an alcoholic compound or paragraph 3 as a chemical compound or mixture containing alcohol.—*U. S. vs. Chattanooga Brewing Co.* .

(T. D. 1809.) ADULTERATED BUTTER.—The Internal Revenue Office does not accept as a precedent the case of United States v. 11,150 pounds of butter, Milton Dairy Co., 195 Fed. 657. The office will continue to assess the civil liability in every case where the moisture content is 16 percent. or over; and its purposes to proceed against the manufacturer of butter which contains 16 percent. or more of moisture for his failure to have such butter properly marked, branded and stamped before it is sold or offered for sale. That will bring up the direct question of fact in each case and, even under the decision of the court in the Milton case—that 16 percent of moisture is not adulteration as a matter of law—(it being well known that in most cases of adulterated butter the moisture content runs up to 18 and 19 percent.), there will be a direct issue of fact to be passed on by a jury.

(T. D. 1810.) ADULTERATED BUTTER—METHOD OF SAMPLING.—The Internal Revenue Office has issued instructions that before sampling any suspected adulterated butter, officers should notify the manufacturer, owner, or holder of the proposed sampling, and accord to such person or representative the privilege of being present and securing similar samples at the same time, if so desired.

(T. D. 32975.) IMPORTATION OF WHITE PHOSPHOROUS MATCHES PROHIBITED.—The importation into the United States, on and after January 1, 1913, and the exportation after January 1, 1914, of white phosphorous matches is prohibited.

(T. D. 32891.) DRAWBACK ON SACCHARIN.—Drawback was allowed on saccharin manufactured by Fries Bros. of New York, from imported orthotoluolsufamid and potassium permanganate, proportioned to the relative values of the saccharin and various by-products obtained in the manufacture thereof.

(T. D. 32888.) DRAWBACK ON BENZOIN AND ALMOND LOTION.—T. D. 32180 providing for an allowance of drawback on benzoin and almond lotion manufactured by the Andrew Jergens Co. of Cincinnati, Ohio, with the use of domestic tax-paid alcohol was extended to cover sample bottles of the preparation.

(T. D. 32932.) DRAWBACK ON FLUIDEXTRACTS.—Drawback was allowed on fluidextracts, tinctures, and other pharmaceutical preparations manufactured by H. K. Mulford & Co. of New York, with the use of domestic tax-paid alcohol, the quantity of alcohol to be taken as a basis for payment of drawback to equal that actually contained in the exported articles without allowance for waste.

(T. D. 32944.) DRAWBACK ON SINKINA.—Drawback was allowed on Sinkina, manufactured by the Metropolitan Pharmaceutical Co. of New York, with the use of domestic tax-paid alcohol. In liquidation, the quantity

of domestic tax-paid alcohol which may be taken as the basis for payment of drawback may equal the quantity actually appearing in the preparation as exported, provided that in no case shall it exceed 12 percent. in volume of alcohol of 190 degrees proof.

(T. D. 32892.) DRAWBACK ON CHEWING GUM.—Drawback was allowed on "U-all-no mint chewing gum," manufactured by the Manufacturing Co. of America, Philadelphia, from refined sugar obtained from imported raw sugar, chicle and essence of mint.

The Bulletin Board

GEORGE M. BERINGER.

George Mahlon Beringer, president-elect for 1913-14, of the American Pharmaceutical Association, was born in the old district of Southwark of Philadelphia on February 3, 1860. He obtained his early education in the public schools of that city, graduating from the Central High School with the degree of A. B., and a standing meriting the award of a teacher's certificate. He developed special fondness for the study of chemistry and this led him to enter the employ of the firm of Bullock & Crenshaw on March 1, 1876, where he made the acquaintance of the late Thomas S. Wiegand, editor of the later editions of Parrish's Pharmacy, who assisted and guided him in his early studies in pharmacy. The strong friendship then established lasted until the decease of Mr. Wiegand.

In 1878, Mr. Beringer matriculated as a student in the Philadelphia College of Pharmacy, graduating in 1880, the subject of his thesis being "Caffeina."

Subsequently he engaged in laboratory work with Bullock & Crenshaw and later became manager of their retail department as well as an advisory and research chemist. Being employed during the day, he was unable to enter the Analytical Laboratory of the Philadelphia College of Pharmacy, and took, instead, an evening course with Dr. Henry Leffmann, the well known chemical expert.

At this time he became active in the organization of the Lyceum of the Ebenezer M. E. Church of Philadelphia, contributing literary and scientific essays and participating in debates, a training which proved to be of much value to him in his subsequent work.

In 1882 Mr. Beringer was married to Miss Estella F. Wolfe, of Camden, N. J., and removed to that city. In order to carry out more fully his experimental and research work, he fitted up a small laboratory at his residence, and here in the early hours of the morning and frequently the late hours of the night, he made his investigations.

After graduation from the Philadelphia College of Pharmacy, he continued his studies, chiefly along botanical and chemical lines, and in these he has been largely self-taught. Summer vacations were utilized for botanical excursions, and his herbarium is a good representation of local flora. He was one of the founders of the Philadelphia Botanical Club, and was its president for several years.

In 1892 he was elected director of the Microscopical Laboratory of the Alumni Association of the Philadelphia College of Pharmacy, and performed the duties of this position until the association turned the laboratory over to the Philadelphia College of Pharmacy in 1894.

Mr. Beringer remained with Bullock & Crenshaw until June 1, 1892, when he purchased the retail drug store of the late

Albert P. Brown at the northeast corner of Fifth and Federal streets, Camden. In 1898, he rebuilt, remodeling and refitting the store to meet the demands of a rapidly growing manufacturing and physicians' supply business, as well as an extensive retail drug trade. He specialized in urine analyses for physicians and has made many hundreds of analyses; also a number of toxicological investigations for the police authorities in cases of suspected poisoning in Camden, Burlington and Cape May counties.

The degree of Ph. M., honoris causa, was conferred upon him by his Alma Mater in 1903. He is a life member of the Philadelphia College of Pharmacy and the Chairman of its Board of Trustees, as well as the Chairman of the Committee on Instruction and a member of other committees. He is a life member of the Academy of National Sciences of Philadelphia, and its Botanical Section; of the Philadelphia Botanical Club and the American Chemical Society. He became a member of the American Pharmaceutical Association in 1893 and is a most active and loyal member. He is chairman of the Committee on Unofficial Standards, and a member of the Committee on Publication, the Committee on National Formulary, and the Pharmaceutical Syllabus Committee. He is a "live wire,' as the late C. S. N. Hallberg would say, and his work on behalf of the Association has been most valuable. He is a member of the New Jersey Pharmaceutical Association and was its President of 1904-05. He is, also, an honorary member of the Pennsylvania and Maryland Pharmaceutical Associations. Lastly, he is an exceedingly active member of the Committee on Revision of the U. S. Pharmacopœia, and Chairman of the Sub-committee on Fluid and Solid Extracts.

He is broad-gauged, interesting himself in public affairs, as well as those of his own calling. He places high value upon building and loan association work as a stimulus to thrift. The Guarantee Building and Loan Association of Camden resulted from a meeting held at his home in August, 1886, and from its inception he has been its secretary. He takes a deep interest in legislative affairs generally, and has been a leading spirit in a number of movements in his city for the uplift of civic conditions.

Mr. Beringer is a man of action. He is a close student of the progress of pharmacy and allied sciences, and his contributions to pharmaceutical literature have been many and valuable. He loves work—he revels in work, or as a fellow-member of his on a committee of the American Pharmaceutical Association once said of him to the writer—"He is a fiend for work," and his capacity seems unlimited. Moreover, with his love of work, he has the ability of inspiring enthusiasm in others; the committees of which he is the chairman "get things done." His work is marked by unusual ability, thoroughness and practicality. He is purposeful and resourceful. He wastes no time in unnecessary details. He gets "at the core of things," picking "kernels of truth from hulls of sham" and yet covers his subjects fully.

Personally, Mr. Beringer is genial, warmhearted and every ready and willing to help others, and to do his full duty in all movements for the advancement of pharmacy. His critical faculty is highly developed, but he is an unsparing critic of himself, as well as others, and is fair and reasonable with his opponents. His conclusions are carefully made, but once made they are firmly maintained, and generally prove to be correct.

His many friends will rejoice in the honor that has come to him, in his election as President of the American Pharmaceutical Association, and will wish him many years of happiness, usefulness and prosperity.

J. W. E.

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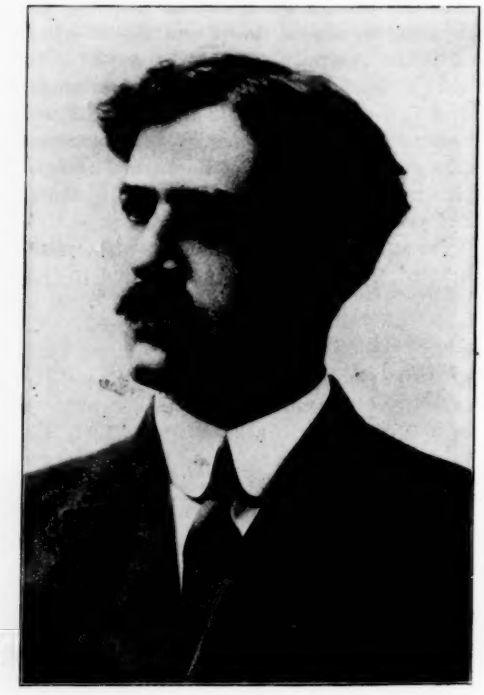
CARL L. ALSBERG.

THE NEW CHIEF OF THE BUREAU OF CHEMISTRY.

Dr. Alsberg is the son of a chemist and grew up in an atmosphere of chemistry. He was born in New York City April 2, 1877, and his early education was had in private schools in New York City, and in 1892 he entered Columbia University, receiving the A. B. degree in 1896. He then entered the College of Physicians and Surgeons of Columbia University, receiving his M. D. degree in 1900, and the degree of A. M. from the University during the same year. He then went to Germany, and during the period from 1900 to 1903 he took graduated work in the University of Strassburg along the lines of pharmacology, physiological chemistry, and internal medicine. For two months in the spring of 1901 he was a research worker at the German Imperial Institut for Experi-

mental Therapeutics at Frankfort-am-Main, and also at the Senckenbergisches Institut. He took graduate work at the University Summer School in Berlin during the summer recess of 1901, and from June, 1903, to January, 1904, he was a graduate student in chemistry at the University of Berlin. While in



DR. CARL L. ALSBERG

Germany, Doctor Alsberg worked under Schmiedeberg, who is recognized as the leading chemical pharmacologist in the world.

In September, 1902, Doctor Alsberg was appointed Assistant in Physiological Chemistry at Harvard Medical School, with leave of absence until January, 1903. He was granted leave from June, 1903, to January, 1904, to go abroad for purposes of study. In June, 1905, he was advanced to instructor in biological chemistry at the Harvard Medical School and jointly with a colleague of the same rank put in charge of the Department of Biological Chemistry. The next year he was advanced to faculty instructor and made sole head of the Department, which position he retained until his resignation in October, 1908, to accept a position in the Bureau of Plant Industry of the United States Department of Agriculture. He was appointed in that Bureau after a long search for a man who could combine the science of pathology, physiology, and chemistry in such a way as to conduct a number of special investigations upon which work he has been engaged up to the present time.

Dr. Alsberg has acquired an international reputation as an authority on the biological phases of chemistry. He has been Chairman of the New Biochemical Section of the American Chemical Society—the largest and most influential scientific society in America—since its formation. At the St. Louis Exposition he was Secretary of the Section of Physiological Chemistry of the International Congress of Arts and Sciences. His publications in the field of biochemistry have been numerous. Since being in the service of the Department of Agriculture, Doctor Alsberg has received a number of flattering offers to take up work along the lines of pharmacology and chemistry from colleges and other institutions.

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MORE ABOUT THE PROPAGANDA.

In an article by Dr. Fantus printed in the November JOURNAL he states that some doctors object to druggists giving gratuitous therapeutical information to physicians in the U. S. P. and N. F. propaganda work. He further states that some of the therapeutic ideas advanced by pharmacists "though taken from text books" are antiquated, etc.

How deplorable that whatever good is intended in a movement will be misconstrued! May I ask the doctor a few questions:

Are all the text books obsolete?

Has he consulted some of the living writers of text books?

Is there anything good in text books?

Are the tried remedies (though antiquated) to be discarded; e. g., are senna, aloes, rhubarb, podophyllum, magnesium sulphate, etc., to be replaced by Smith's Laxine, Cathartizine, General Purpose Tablets, etc.?

Is sufficient stress laid upon the teaching of therapeutics and materia medica in every medical college?

Would Professor Lister turn over in his grave if he knew how he is being immortalized by the Listerine Manufacturing Company?

What were the primary objects of the A. M. A. in promulgating the work of its Coun-

cil on Pharmacy and its Chemical Laboratory?

Has their work brought results?

The doctor states truly: "The better educated the doctor the less will he be in need of the U. S. P. and the N. F. propaganda."

What sane man will not admit this? But may I ask Dr. Fantus if he knows what per cent. of the prescriptions of five years ago proved that many prescribers were of the better educated kind? May I ask the doctor if he has ever examined a class of recent medical graduates in prescription writing?

Not wishing to take up too much space in THE JOURNAL OF THE A. PH. A., I would earnestly refer the doctor to an article in the *Journal of the A. M. A.*, Sept. 30, 1911, pp. 1133-1135, entitled "Prescription Writing."

The doctor recommends that the druggist should endeavor to educate the physician in other matters, e. g., pleasant methods of administration. I agree with the doctor, but permit me to state that this subject would soon be exhausted, the capsule, cachet, pill, chocolate-coated tablet and a few elixirs will do the work. The value of the remedy is in the active ingredient, not in the taste.

The doctor continues and mentions "commercialism," "counter-prescribing," "refilling of prescriptions," and lastly, "substitution" (the war cry of the slanderer). Will the poor druggist ever hear the last of these accusations, which were borne by his competitors: (a) the dispensing physician, (b) the grasping physician, and (c) the enemies of both the physician and the druggist, the specialty manufacturers, and the synthetic grafter?

For mercy's sake, "let us have peace." The writer believes that any man who is familiar with pharmaceutical education knows well that we have men and women educated in pharmaceutical science equal to the best equipped doctors in the medical science.

These kind of pharmacists are making propaganda of the U. S. P. and N. F. preparations and are certainly ready and willing to do all in their power to assist medical men in preventing and stamping out disease, and do not consider the loss to their pocketbook, either.

Let us realize that there are good and bad druggists, good and bad doctors, but let us think only of the good ones and forget those things in this world which belittle our fellow man.

E. A. SENNEWALD.

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SCIENTIFIC SECTION MEMBERSHIP.

While every member of the American Pharmaceutical Association may rightfully claim membership in each and every one of its several Sections, there are many who are not sufficiently interested in purely scientific pharmacy to have any desire to be actively identified with the work of the Scientific Section, and who would pay no attention whatever to any communications from the Section. To prevent undue waste of the resources of the Association, and to conserve the energies of the officers of the Section for the cultivation of only the promising part of the membership field, it is proposed that there be made up a list of active members for the Section. Now, neither the Chairman nor the Secretary are sufficiently conversant with the mental trend of the members of the Association to warrant them to presume to compile such a list; hence, they request each and every member who wishes to be considered a member of the Section to write on an ordinary postal card, "Member Scientific Section, A. Ph. A.," following this with his name and address; and then address the card to F. P. Stroup, Secy., 145 North Tenth St., Philadelphia, Pa.

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THE A. PH. A. HOME.

December 2, 1912.

Professor James H. Beal, Scio, Ohio.

My Dear Professor Beal: Your editorial in the November JOURNAL on the need of a building for the A. Ph. A. impressed me so much that I read it to our faculty with the result that I am authorized to write you, saying that the Buffalo College of Pharmacy subscribes $100 toward an A. Ph. A. building for its own purposes, payable as soon as total subscriptions amounting to $5000 are received and a call is made upon such subscribers.

We are aware that this sum is somewhat minute for the ultimate purpose, but sometimes a small beginning is sufficient to inaugurate a promising movement, and in this hope we make this proposition. Of course back of this is an appreciation of the great service that the A. Ph. A. has rendered to American pharmacy and a recognition of its need of a building of its own in which to

conduct its affairs. With personal regards, I am, Yours very truly,

WILLIS G. GREGORY, *Dean.*

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INDIANA BOARD OF PHARMACY.

SALEM, IND., Nov. 28, 1912.

Prof. James H. Beal, Scio, Ohio.

My Dear Mr. Beal: I want to compliment you on your article in the last JOURNAL on having a home for the A. Ph. A. That is one of the best suggestions that has been made in a long time.

I should like to have a part in such a work, although, like most druggists, not in position to give a large amount. Why could we not have a fund started with that object in view? I think we could get some city to give us the ground and perhaps some help on the side.

The first time I am in Indianapolis will see what some of our druggist friends think of the proposition. Yours truly,

W. H. RUDDER.

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THE DIFFERENCE.

D. N. ROBIN, PH. G.

"Lives of great men all remind us
We can make our lives sublime,
And departing, leave behind us
Footprints on the sands of time."

At near midnight on November 12, 1912, a druggist by the name of J. Arthur Bean died from the effects of an automobile accident received some weeks earlier.

Since his death the entire pharmaceutical press has been filled with notices of his life and work, such as the following:

"It is no exaggeration to say that the death of J. Arthur Bean, of Somerville, has cast all drug-trade matters of general interest in Boston and vicinity into the background during the past month."

"Only those who have been fortunate enough to come into personal contact with him in association work can fully realize the great loss in the untimely death of J. Arthur Bean."

"I can readily understand how much you must be grieved on learning of the death of our mutual friend, Mr. J. Arthur Bean."

"Our friend has gone from us forever so far as this world is concerned, but it is not hard to believe that such men as J. Arthur Bean can never die, but the influence of his life will ever live."

These and scores of similar tributes have expressed the deep and abiding affection in which he was held by his druggist friends and associates.

Mr. Bean was only about forty years of age, yet I have known of druggists who lived to be fifty, sixty, seventy, and even ninety-three years of age, whose demise only brought forth a brief notice in their home paper, giving the dates of their births and deaths.

Why this difference?

At about the same time as Mr. Bean's death, there died another druggist whom we will call "X," since X is an unknown quantity, and the greater proportion of druggists who die annually are unknown quantities in the drug world.

When druggist X died he was about fifty-seven years old. He graduated from a college of pharmacy at about the time Mr. Bean was born. The death notice was the stereotyped one stating that he was a local druggist who conducted a drug store on Z St.

During the hour of the services over the body of Mr. Bean every pharmacy in Somerville was closed.

During the services over X's remains only his immediate family and relatives knew of it, or cared.

Mr. Bean died leaving two flourishing drug stores; he had attained many honors in his profession, and his death was the cause of much sorrow to his fellowmen.

When X died he had an interest in one of the smallest drug stores in the city in which he lived. He had never received any honors, and he "never will be missed."

What was the difference?

The one man was a doer of deeds, he recognized his obligations to his fellow-workers in pharmacy, and strove earnestly to discharge them. He gave largely of his time and money to association work, and the more he gave, the more he gained.

The other man lived for himself alone, and did not recognize that he owed the world any obligations, and consequently the world does not recognize any obligations to him. He saved his money and his time, instead of "wasting" them on association work, and the more he saved, the less he had.

Let us, then, be doers of deeds and lovers of men, so that when we die we shall have earned the tributes of our fellows and not be an unknown quantity as was druggist "X."

Proceedings of the Local Branches

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

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NORTHWESTERN BRANCH.

The first of a series of winter meetings of the Northwestern Branch of the American Pharmaceutical Association was held in the lower lecture room of the College of Pharmacy of the University of Minnesota, on Thursday afternoon, November 21, 1912, beginning at 2:30. The Minneapolis Retail Druggists' Association had been invited to meet with the Branch and did so, first holding a short business meeting of its own.

The new president of the Branch, Mr. Stewart Gamble, occupied the chair. After disposing of the regular routine business, the program of papers was begun. A communication from the laboratory of the American Medical Association relating particularly to phenacetine and acetphenetidin was made the basis of a discussion of proprietary substances and proprietary rights attaching to so-called patent proprietary and copyrighted remedies, and it was pointed out that when a patent on a proprietary substance expires, not only the product but the protected name of the product as well become common property.

The next paper on the program was entitled "A Report on the Denver Meeting of the A. Ph. A.," and was read by its author, Professor G. Bachman. The paper was a brief review of the activities of the Denver meeting.

Mr. Charles H. Huhn was the next speaker, taking up extemporaneously the subject, "Propaganda Work by the N. A. R. D." Mr. Huhn dilated upon the work the N. A. R. D. is doing and emphasized that by successful propaganda work not only pharmacists were benefited, but all interests connected with pharmacy, particularly the physicians, the colleges, the wholesale trade and even public health as well.

Mr. James Baillie read the next paper entitled "A System for the Extension of Propaganda Work." Mr. Baillie is a new member of the Association and was formally introduced by the chairman to the Branch. Mr. Baillie laid especial emphasis upon the need of higher educational standards for pharmacy and pharmacists and his observations, he stated, led him to believe the prophecy to be a correct one that in the near future there will be a separation of the present activities of the pharmacists into two distinct lines. The well-trained pharmacist of today will become the professional practitioner of pharmacy who will be on an equal footing with the physician in the estimate and respect of the public. The commercial pharmacist will become the vendor of such things that do not require a high degree of professional training. Both callings will be honorable. In discussing the paper, Dean Wulling commended the high ideals expressed in it and referred to the propaganda work being done by the College of Pharmacy with the third-year students of the University Medical College and with the physicians through the operation by the College of the dispensing department of the University Free Dispensary. By an arrangement effected five or six years ago with the Medical College the College of Pharmacy has since been giving regularly a short course on the Pharmacopœia to the third-year medical students. The object of this work with the medical students is to give them a comprehensive idea of the U. S. P. and N. F. and to indicate that many proprietary remedies were actually based on the U. S. P. or N. F. In this connection the Dean also referred to the very valuable research work that is being done by many manufacturing houses.

That the medical faculty has grown to realize the need of more training on the part of the medical practitioner in pharmacy and materia medica was shown by the character of the courses in materia medica and pharmacology given to the medical students by Dr. Brown. The doctor, who spoke next, stated that it was his aim to turn out medical men who could write prescriptions for U. S. P. and N. F. products.

Professor Bachman next read a paper on

the preparation of pharmaceuticals by the pharmacist. After reading the paper, Professor Bachman demonstrated the ease with which compressed tablets and tablet triturates could be quickly made by the pharmacist. The paper was illustrated by a large display of suppositories, capsules, pills (coated and uncoated), tablets, cachets, powders and other pharmaceutical preparations.

"A Difficult Prescription" was the title of the subject treated by Mr. John A. Handy. Mr. Handy is a recent addition to the faculty of the College of Pharmacy, and upon request of Branch President Gamble was introduced by Dean Wulling, who in his introduction briefly told of the development of the college and the growth of its faculty. Reference was made to the fact that not only is the student-body and the faculty growing very satisfactorily, but that the material equipment and housing of the College are going forward at a rapid rate as evidenced by the fact that the College has now at its disposal the handsome sum of $109,000 for the remodeling and equipping of two buildings for its sole occupancy by March 1st. Mr. Handy illustrated his paper by compounding in various ways a certain difficult prescription that was prominent at a recent Board examination. He showed that unless the prescription was compounded secundum artem an explosion was likely to follow and did follow in one of his experiments. Mr. Hughes, who had traveled several hundred miles to attend the meeting discussed the prescription.

The last of the stated numbers on the program was an address by Dean Wulling on "An Opportunity for Northwestern Pharmacy." Two opportunities were discussed which if developed would result in the enlargement not only of Northwestern Pharmacy, but of the pharmacy of the entire country. The Dean referred to the lack of headquarters for the A. Ph. A. and suggested the advisability of offering a permanent home to the Association here in Minneapolis. The suggestion was enthusiastically received, but at the special request of the speaker no action will be taken by the Branch until a certain plan which the speaker had in mind could be developed and presented.

The second opportunity was pointed out to lie in the closer cooperation between the pharmacists of the Twin Cities and the College. An arrangement was suggested whereby the two hundred or more drug stores in the Twin Cities would employ young men, giving them privilege to attend College during employment. In this way it was suggested the College training and the practical drug store experience could be gained concurrently. The College and about ten or a dozen pharmacists are cooperating in this way at the present time and the success which has attended this experiment should commend it to a much wider application. This plan would help out both the student and the proprietor and would result in supplying the ranks of pharmacy with superior men. Mr. S. J. Horn, who has for more than a decade now given employment to students while they attended College, spoke of the great satisfaction this arrangement gave to himself and the students.

Dr. Brown, Messrs. Upsher Smith, Robinson, Hughes, Huhn, Tupper, Rauch, Kruckeberg and others took part in the discussions.

About fifty were present. Adjourned at 5:30 p. m.

EDWIN L. NEWCOMB, Secretary.

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PHILADELPHIA BRANCH.

A joint meeting of the Philadelphia Branch and its Scientific Section was held at the Engineers' Club on the evening of November 5, the officers of the Scientific Section being in charge. Paul Stewart Pittinger was elected to membership in the Branch. Dr. F. E. Stewart read a communication from General Secretary Beal urging the members to live up to the ideals of the Association, and also read a reply which he had framed, both being accepted by the meeting.

The attendance was about 60, considerably more than the usual number. Quite a number were visitors, and on motion they were granted the privilege of the floor. I. N. Broomell, D. D. S., read a paper on "The Relation of Pharmacy to Dentistry," illustrating it by use of a large number of lantern views. Joseph Head, D. D. S., read a paper on "Dentifrices and Their Ingredients," illustrating it with a number of specimens and a practical demonstration of the abrading action, on a tooth, of a dentifrice composed of supposedly harmless ingredients. Both papers, or abstracts therefrom, will appear in the JOURNAL.

Dr. Stewart opened a discussion, which was participated in by Messrs Blair, Kebler, and Cliffe, Professors Remington and Sturmer, and Doctors Lowe, McCullough, Wood, Urner, and Nodine. There were expressed

almost as many varieties of opinion, as to the merits or demerits of various dentrificial substances, as there were participants in the discussion.

F. P. STROUP,
Secretary Scientific Section.

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SAINT LOUIS BRANCH.

At the meeting of the Saint Louis Branch of the American Pharmaceutical Association, held on November 29, J. W. Mackelden was elected secretary to fill the vacancy caused by the resignation of Mr. William H. Lamont, who has moved to Kansas City.

Doctor George M. Heath gave a talk on the "Fixation of Atmospheric Nitrogen," and showed by lantern slides the principal furnaces now in use in various parts of the world for the manufacture of synthetic nitrogen products.

Doctor H. M. Whelpley showed by lantern slides some of the first prescriptions filled in the store of William Procter, Jr., the father of American Pharmacy, and commented on them. These prescriptions are very interesting from the point that they are written upon slips of paper of odd sizes, shapes and colors, clearly indicating that they were not diecut, but torn from any piece of plain paper which happened to be at hand. The price charged for filling these prescriptions range from six cents for a four-ounce mixture to thirty-one cents for a twelve-ounce mixture.

In those days the physician signed only his initials, and the initials H. C. W. appearing on one of these prescriptions, Doctor Whelpley stated, were those of Doctor H. C. Wood, one of the compilers of the U. S. Dispensatory. Many questions were asked about these prescriptions, and one thoughtful member wanted to know of Doctor Whelpley how he came in possession of the first file, which contains about 20,000 prescriptions. Doctor Whelpley's answer was very interesting, but too long to repeat here.

Mr. Carl T. Buehler read two papers, one on the manufacture of Compound Solution of Cresol, and the other on the manufacture of Elixir of Terpin Hydrate. These papers were briefly discussed by Professors Hemm, Good, Suppan and Doctor Whelpley. A further discussion of them will be taken up at the December meeting.

J. W. MACKELDEN, Secretary.

CITY OF WASHINGTON BRANCH.

The regular December meeting of the City of Washington Branch of the American Pharmaceutical Association was held December 11, 1912, at the National College of Pharmacy. Mr. Lewis Flemer, President of the Branch, presided.

Following the regular order of business, the Chairman of the Committee on Nominations, Mr. S. L. Hilton, read the report on nominations which he, in conjunction with Mr. M. I. Wilbert and Dr. Henry E. Kalusowski, the other members of the committee, had prepared.

The report was received, and in the absence of other nominations, the Secretary was directed to cast the unanimous vote of the Branch for the nominees proposed by the Committee. This being done, the following officers were declared elected for the ensuing year:

President, Dr. Lyman F. Kebler.

First Vice-President, Mr. W. S. Richardson.

Second Vice-President, Dr. Henry E. Kalusowski.

Secretary, Mr. Henry B. Floyd.

Treasurer, Mr. Wymond H. Bradbury.

Committee Chairmen—Membership, Mr. Herbert C. Easterday; Legislation, Mr. W. S. Richardson; Medical Relations, Mr. Lewis Flemer; Scientific Papers, Dr. Rodney H. True; Publicity, Mr. J. Leyden White.

The Secretary then made a report on Commercial Pharmacy, wherein he cited O'Connor's Treatise on Commercial Pharmacy, from which he read certain sections which were discussed and criticised. The discussion then turned to Federal regulation of licensing pharmacists, after which the meeting was adjourned.

The next meeting will be held January 15, 1913. HENRY B. FLOYD, Secretary.

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NASHVILLE BRANCH.

The regular meeting of the Nashville Branch of the A. Ph. A. was held at Furman Hall, Vanderbilt University, Thursday, December 12, at 3 p. m., Dr. J. O. Burge presiding.

After the reading and approval of the minutes of the preceding meeting the regular subject of Abstracts was taken up.

Interesting abstracts reviewing the year's

work in Pharmacy were read by Wm. R. White and Dr. J. O. Burge.

An interesting discussion followed the reading of an abstract relating to the causes of precipitation in Fluidextracts, which was participated in by Ira B. Clark, M. E. Hutton, and Dr. E. A. Ruddiman.

Dr. Burge told of a Fluidextract of Wild Cherry he made that had been filtered three different times this year and was still precipitating.

Dr. E. A. Ruddiman then entertained the Branch by the exhibition of an explanation of the use of an Abbe-Zeiss Refractometer and a Haenitsh-Schmidt Saccharimeter.

After a thorough discussion of a plan to increase the membership of the A. Ph. A. in the Southern States the Branch adjourned to meet again Thursday, January 9, 1913.

WILLIAM R. WHITE, Secretary.

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NEW YORK BRANCH.

At the meeting of the New York Branch of the American Pharmaceutical Association held December 9th, there were no reports by officers or standing committees with the exception of the committee on the progress of pharmacy. The chairman of that body, Otto Raubenheimer, reviewed in synopsis the following articles in recent European periodical literature: "The Differentiation of Cocaine and Its Synthetic Substitutes," "Hydrocyanic Acid in White Clover," "The Glucosides of Strophanthus," "The Use of Resins and Gum-Resins in Plasters," "The Constitution of Picrotoxin," "Incompatibility of Antipyrin and Pyramidon with Iodine and Iodides," "Filtering Liquids Containing Fine Precipitates," "Suggested Additions to the Belgian Pharmacopœia," "A Pharmaceutical Museum at Magdeburg," "A Comparison of the Toxicity of Methyl and Ethyl Alcohols," "The Use of Potassium Bicarbonate in Fowler's Solution," "The Detection of Mercuric Chloride in Calomel," "The Detection of Calomel in Mercury Bichloride," and "The Constituents of Taraxacum."

This report was briefly discussed by H. V. Arny, and was duly received.

For the special committee on a plan for the certification of pharmacies, C. O. Bigelow, the Chairman, reported that the committee was of the opinion that only through legislation could its purpose be accomplished.

President G. C. Diekman appointed the following nominating committee: Hugh Craig, John Roemer, and J. L. Mayer. The nomination and election of officers will take place at the January meeting.

A paper on "The Pharmacy of the Oxycholesterin Ointment Bases" was read by John Roemer. In this the author related his experiences with the adapting of ointment bases containing oxycholesterin to general prescription work.

Mr. Roemer had found it impossible to obtain in this country any of the waxy alcohol compound of the iso- and oxycholesterin group separated from wool-fat. As this substance is the oxycholesterin which is said to add much to the usefulness of ointment bases, he attempted to get some by extraction from the oxycholesterin-hydrocarbon combination known as eucerin. This product, he said, did not agree very well with the definitions given by Dr. Unna at the June meeting. By extraction with various solvents and the fractionation of the solutions he found that the market product consisted of an oily liquid and a paraffin-like body. The oily liquid appeared to be a mixture of a cholesterin substance and a light hydrocarbon oil. This oily liquid had to a considerable extent the property of increasing the absorbing power of fats, which is characteristic of the waxy alcohols of wool-fat. This property was not very well developed, however, except with hydrocarbon bases. The light petroleum distillates added to the oily liquid formed a base which would absorb about 800 percent. of water.

Petrolatum containing a small proportion of the oily liquid separated from eucerin, was found by Mr. Roemer to afford an excellent base for mercury and its salts, although "a deal of elbow grease" was required to make an ointment containing 75 percent. of mercury.

In connection with his remarks, Mr. Roemer exhibited some of the separated oxycholesterin liquid and a number of ointments prepared with oxycholesterin bases.

In discussing this paper, J. L. Mayer questioned the wisdom of experimentation with proprietary or protected products. Otto Raubenheimer said that he had been told that eucerin had been improved by the use of petrolatum to replace the paraffin ointment in the original base.

An unanounced but interesting feature of the meeting was an illustrated travelogue by C. A. Mayo covering the scenic itinerary of

the visitors to the Denver meeting of the American Pharmaceutical Association. It needed not the description of the speaker to make plain the attractiveness of the sections of the Rocky Mountains visited as a part of the entertainment of the Denver meeting, as the lantern slides exhibited by Mr. Mayo depicted realistically a well-selected series of views. Doubtless all of his hearers agreed with his statement that those who do not attend the annual conventions miss much of a pleasurable nature.

Mr. Roemer and Mr. Mayo were formally thanked by the Branch.

At the January meeting C. P. Wimmer will deliver an address on "Chlorophyl."

HUGH CRAIG, Secretary.

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CHICAGO BRANCH.

The December meeting of the Chicago Branch was held at the University of Illinois School of Pharmacy, Tuesday evening, December 17th, and was devoted to a symposium on "Pleasant Medication."

President J. H. Wells occupied the chair. Professor C. M. Snow presented a paper on Troches which considered the agents intended to be administered in this form, and gave an account of the troches included in the more recent foreign pharmacopœias. He pointed out that many of the troches official in foreign phamacopœias are not included in the U. S. P. He compared a list of the U. S. P. troches from the first Pharmacopœia to the present. The speaker also discussed the flavoring with a discussion and forecast of the troches which will be included in the new National Formulary. Samples of several of these prepared for the occasion were shown.

Dr. Fantus then presented his paper on Candy Medication. He referred to the difficulties in getting children to take medicine when the medicine is unobjectionable, perhaps even pleasant, to the adult taste. Experience with children of fond and over-indulgent parents had led the speaker to avail himself of the child's well-known fondness for candy, in order to give the medicine in this form. He had found that the pharmacopœial lozenges, with the exception of the Santonin troches, were not suited to his purpose. As a result of his experiments Dr. Fantus laid down these principles: that candy medicine must be pleasant and must disintegrate rapidly in the mouth; that only tasteless or nearly tasteless medicaments can be given in candy form; that a lightly-compressed tablet of powdered sugar is the most practical form for candy medication, as it keeps well and disintegrates rapidly. Dr. Fantus prepared several kinds of tablets extemporaneously, so as to indicate how readily the pharmacist might prepare these upon call. Neither great skill nor expensive equipment is required. Typical formulas were submitted and samples of about twenty kinds of candy medicine were shown.

Professor A. W. Linton of Valparaiso University discussed the Elixirs, prefacing his remarks with an interesting historical sketch from the time of the alchemists when the much-sought elixir was the one which would convert baser metals into gold, down through the later centuries when the 'elixir of long life' and similar preparations were given much attention, and from thence to our modern elixirs as represented in our Pharmacopœia and National Formulary. Professor Linton showed a number of specimens of the official elixirs and commented on them. He spoke of the desire for a wider range of flavors and told how it had been met in the elixirs proposed for the National Formulary. He referred also to the desirability of decreasing the alcohol strength as far as possible.

Mr. M. M. Burdick of the Abbott Alkaloidal Co. closed with the presentation of the subject of pleasant medication as dealt with by the manufacturer. He pointed out the advantages in equipment, accuracy and economy which the manufacturer possesses as regards some lines of pharmaceuticals and urged the need of greater cooperation between the various interests involved in the supplying of medicines.

The papers as presented were discussed by President Wells, Mr. Storer, Mr. Sass, Mr. Galloway, Mr. Loesch, Mr. Gray and others.

Upon motion, a vote of thanks was tendered the speakers of the evening.

A committee consisting of Professors Clark and Miner and Mr. Becker was appointed to present a list of nominations for the Branch offices at the January meeting.

W. B. DAY, Secretary.

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PITTSBURGH BRANCH.

The meeting of the Pittsburgh Branch of the A. Ph. A., Friday evening, December 13, was marked by an exceptionally large attendance and the proceedings were well worth the

effort made by those who were there. It would have been a wise move upon the part of any druggist active in business to have taken the time to attend this meeting, even had it necessitated the paying of a relief clerk, the information given would be worth it all and more as an investment, and the profit greater than that from an average evening's sales in the drug store.

It will be recalled by those who read the proceedings each month that much attention was given at the November meeting to the numerous Cresol preparations, because of the thoughtless manner in which they are often, in fact almost universally dispensed, as not being of a dangerous character, hence not accompanied with cautionary advice to the buyer. Stress was laid upon the fact that one of the most prominent preparations of the class, Creolin-Pearson, bears a label containing the words, "Non-Poisonous." Following this discussion the Secretary was instructed to take up this matter with the distributors of Creolin-Pearson. The Secretary read the correspondence with Merck & Co., and called attention to the presence of Mr. B. L. Murray, chief chemist in charge of the firm's laboratory, at Rahway, N. J., who had come to the city for the express purpose of making the position of Merck & Co. with reference to Creolin-Pearson clear.

On motion of Dr. Emanuel, supported by Dr. J. C. Wallace, Mr. Murray was invited to take the floor and to participate in the discussion. Mr. Murray satisfied those present by laboratory notes, records of physiological experiments both at home and abroad, covering a period of more than 25 years, that not a single case of death from the use of Creolin-Pearson when properly used had ever been reported. This contention was backed by communications from eminent practitioners and institutions of prominence. He exhibited a new form of label upon which the non-poisonous statement is qualified by the words "when used in accordance with the directions given."

In a spirit of fairness we submit an epitome of Mr. Murray's remarks:

"In response to the invitation of the Branch communicated by Secretary Pritchard to the agents for Creolin-Pearson, I am here as their representative from New York to be present at this meeting. Creolin-Pearson is an article that has enjoyed the widest possible use for nearly thirty years. It is used not only in the United States, but also in England, Germany, Austria, South Africa, India and other countries. Its use is not confined to hospitals and physicians where special training in the handling of drugs and disinfectants is found. It is used in the households of the world, where no special knowledge of disinfectants exists, and yet with all this extensive and indiscriminate use, no authentic case of the death of any person from the use of Creolin-Pearson has come to the attention of the agents. This alone is strong presumptive evidence of the non-poisonousness of Creolin-Pearson. In addition to this, the Imperial German government, through the department properly charged with such matters and corresponding to our Boards of Health, has publicly and officially declared Creolin-Pearson to be non-poisonous. The literature of medicine is found to contain many positive statements by physicians that Creolin-Pearson is not poisonous. These opinions have been corroborated by actual experiments in the laboratory. Numberless times small animals have been fed Creolin-Pearson in the laboratory at Rahway, N. J., without even causing sickness. The experimenter himself has taken a generous dose without even being sick. These experiments were made with Creolin-Pearson diluted in the customary manner as directed for household use. An amount equal to almost 5% of the body weight of the animals was given in these tests. In view of these conditions, it does not seem erroneous to label Creolin-Pearson non-poisonous. But, it may be said, by way of caution, that many imitations of Creolin-Pearson have been found to be decidedly poisonous. The cases that have been reported from time to time of poisoning from the use of creolin have, upon investigation, been always found to have resulted from some one of the various dangerous preparations sold under the name of creolin, and this has led some to the belief that it was Creolin-Pearson." During the discussion Mr. Murray said common salt has been known to produce death, and yet no one would ever for a moment think of classing sodium chloride as a poisonous drug.

Those who participated in the discussion were Drs. Emanuel, Judd, Wallace, Blumenschein and Mr. Young. The latter said his

declaration that Creolin-Pearson had produced death was, no doubt, due to the use of the word creolin, which is usually associated in the druggist's mind with the word Pearson, even though that word does not appear.

A unanimous vote of thanks was tendered Mr. Murray for the trouble he had taken to come here for the purpose of clearing up the situation. The President appointed a nominating committee to prepare a list of nominees for the several offices to be filled and report at the next meeting.

Dr. J. H. Beal was given an ovation by the students present when he took the floor to deliver his illustrated lecture on "The Limestone Caverns of America." Dr. Beal presented many extremely instructive facts concerning the manner of formation of these extensive caverns, and gave the history of the three most widely-known, viz., the Mammoth cave of Kentucky, the Wyandotte cave of Indiana, and the Luray caverns of Virginia, together with many interesting and amusing incidents in connection with each. Dr. Beal opened with the statement: "The study of caves and their formation has a rightful place in pharmaceutical gatherings because they are all produced by chemical action; and, too, because they have been sometimes prescribed by physicians in the treatment of consumption, and every druggist ought to be prepared to fill all prescriptions that the physician may write."

In explanation of the latter statement the doctor cited an instance wherein a party of patients, all of whom were afflicted with consumption, had, under the advice of a physician, taken up their residence in Mammoth cave, where they lived for some time in the hope that by inhaling the dry air continuously their lungs would be healed. The experiment, however, was a failure for the reason that the quietness and depression of the environment overcame the healing properties of the air and many of them died. Dr. Beal showed a very large number of views taken by expert cave photographers of the most interesting and beautiful places found in caverns. At the close of his lecture Dr. Beal was given a most enthusiastic vote of thanks.

B. E. PRITCHARD, Secretary.

Obituaries and Memorials

Persons having information of the death of members of the A. Ph. A. are requested to send the same promptly to J. W. England, 415 N. 33d St., Philadelphia, Pa. Information as to the age, activities in pharmacy, family, etc., of the deceased should be as complete as possible. When convenient a cabinet photograph should accompany data.

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SAMUEL MORTIMER SHIMER.

Samuel Mortimer Shimer, a prominent pharmacist of Middletown, N. Y., died on November 6, 1912, aged 56 years. He was born in the town of Mount Hope on September 8, 1857. He was a member of the firm of Ogden and Shimer, located in Middletown, and during his career had built up a large business. He joined the American Pharmaceutical Association in 1904. He was married on January 5, 1881, to Miss Harriet E. Wiggins, who, with three children, survive him. The funeral services were held at his late residence on November 19, 1912.

Council Business

COUNCIL LETTER No. 4.

Philadelphia, December 2, 1912.

To the Members of the Council:

Motion No. 3 (Time of 1913 Annual Meeting at Nashville), and Motion No. 4 (Election of Members, Nos. 18 to 29), have each received a majority of affirmative votes.

The following letters have been received by the Secretary.

H. H. Rusby writes:

"I desire to heartily second the remarks made by Professor Diehl, in his letter of November 15, regarding the desirability of having the Report on the Progress of Pharmacy published as it has been in the past."

A. H. Clark writes:

"I am opposed to any action leading to a reconsideration of the question involved in Prof. Diehl's letter (in Council Letter No. 3). I am opposed, also, to a National Apothecaries' Home, or rather to the American Pharmaceutical Association having anything to do with it."

W. B. Day Writes:

"I have Council Letter No. 3 and I have read it carefully. I sympathize with Professor Diehl and I think I understand his feeling regarding the publication of the Report on the Progress of Pharmacy in an annual volume, but I am fully convinced that the future of the Association depends very largely upon the success of its Journal and I believe that we ought to bend all our energies and expend all that can be spared of our income upon the Journal. While those of us who are teaching might find the annual report on the Progress of Pharmacy more convenient than monthly abstracts, still I believe that monthly abstracts would be much more widely read and would appeal much more strongly to the membership as a whole. I am not offering a motion on the subject as I take it that has already been acted upon and if a motion is brought forward it would be to reconsider the previous action of the Council and to this I am opposed.

"I believe that the decision of the House of Delegates in regard to the proposition of the National Association of Drug Clerks looking toward the establishment of a home should be approved by the Council. The matter is not yet in sufficiently definite form to make it wise for us to endorse it and if we do not endorse it we should not appoint the trustees from among our members as proposed by the N. A. D. C."

Motion No. 5 (Additional Appropriation for Journal, Printing, Postage, etc.) The appropriations for JOURNAL and for printing, postage and stationery having been exhausted, it is moved by J. A. Koch, and seconded by J. H. Beal that an additional appropriation of $1200 for JOURNAL and $500 for printing, postage and stationery be made.

J. W. ENGLAND,
Secretary of the Council.

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COUNCIL LETTER No. 5.

PHILADELPHIA, December 9, 1912.

To the Members of the Council:

Motion No. 5 (Additional Appropriation for Printing, Postage, etc.), has received a majority of affirmative votes.

On account of the extra work involved in the publication of Volume 59 of the Proceedings and preparing the annual index for the JOURNAL, the General Secretary has found it impossible to arrange a date when he could attend the proposed Legislative Conference at Washington, D. C., prior to January 1, 1913. (See October (1912) JOURNAL A. PH. A., page 1106.)

The General Secretary therefore moves, seconded by J. W. England, that the latest date for such Conference be changed from January 1, 1913, to February 1, 1913.

This motion will be regarded as *Motion No. 6 (Postponement of Date of Meeting of Legislative Conference)*.

Motion No. 7 (Appropriation for Expenses of National Syllabus Committee). Moved by J. H. Beal, seconded by J. A. Koch, that the sum of twenty-five ($25) dollars be appropriated as the A. Ph. A. appropriation for expenses of the National Syllabus Committee.

J. W. ENGLAND,
Secretary of the Council.

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COUNCIL LETTER No. 6.

PHILADELPHIA, December 13, 1912.

To the Members of the Council:

The following communications have been received:

James O. Burge writes:

"I had intended answering your letter relative to the A. Ph. A. Receipt Book, but it was overlooked until now. I will take it up in connection with my discussion of Letter No. 3. I was glad to see Prof. Diehl's regarding the 'Report on the Progress of Pharmacy.' I was not at the Denver meeting and do not know what action was taken regarding the annual volume. It matters little whether we call it 'Year Book of Pharmacy,' 'Proceedings of the A. Ph. A.' or 'A. Ph. A. Annual.' I prefer the latter name, but I want to say that I would dislike very much to see its publication done away with. My reason for this is, that this volume has been a history of American Pharmacy from year to year, for so long a time, that it has got to be a regular "Reference Book" with many of us, and I always look anxiously forward each year to its coming.

"Now, I will tell you what I would like to see this volume contain. I believe it should contain the 'Progress of Pharmacy,' somewhat along the line it has been conducted, making the abstracts as full as the space devoted to its publication will admit of. I think it should contain the papers read at the annual meeting, the discussions of the same, and all important papers of general interest read before the different branches, such papers to be selected and passed upon by the Committee on Publication. The list of members in good standing at the end of each year, with their address, is a good thing and I think such titles or degrees as each member has acquired, either in Pharmacy, Medicine or Chemistry, should appear after his name. The formulas proposed in the Journal for the new Receipt Book, after being tried and criticised by the members, could be collected and published together here until enough were adopted to make a respectable sized book.

"This will give each member a ready bound

volume each year that will be worth something to him and which he will take care of, while if these things are given to us in the Journal only, not one out of ten at the end of the year will have his file complete, or have the same bound. I certainly favor the retention of the annual volume and believe in making it as valuable as possible. Some of our members who joined last year have been asking me about it, and one remarked that what he joined for was to get that volume."

J. M. Good writes:

"Professor Diehl's letter of November 15, 1912, discussing the matter of the publication of the Report on the Progress of Pharmacy, appeals to me with a great deal of force. It is 'an earnest plea for the conservation of the Report—as a concrete publication of the Association in the form in which it has appeared in our Annual Proceedings for over half a century.' He sustains his plea with arguments which, to my mind, are convincing and conclusive.

"The 'Report on the Progress of Pharmacy,' growing in importance with the years, is Prof. Diehl's contribution to scientific pharmacy. His contemporaries appreciate it and those who come after us will acknowledge their obligations to him. Even if I had misgivings as to the form in which it ought to be continued, I would hesitate to put my pudgment in opposition to his. On this subject 'One', with Professor Diehl, 'is a majority.'"

Thomas F. Main writes:

"I find myself in entire accord with Professor Diehl in his belief that the publication of the Report on the Progress of Pharmacy piece-meal in the monthly Journal of the Association will by no means take the place of its former method of publication as a whole in the Annual Volume of Proceedings.

"There can be no question that the report when published in the Annual Volume was carefully preserved by every member of the Association and was more widely consulted as a reference book than any other work on pharmacy.

"It may be said that the report will be almost as accessible in the bound volumes of the Journal, but it will certainly not be as convenient, while it is doubtful if 50 per cent. of the membership of our Association will bind their Journals, and even when it is desired to bind them there is always more or less trouble connected with keeping the monthly numbers together, especially in pharmacies employing a number of clerks who are encouraged to read the Journal as it appears, as the larger the number of readers the more danger there is of numbers going astray.

"If a way can be found to publish the Report on the Progress of Pharmacy as formerly I think it should be done, as I believe it is more valuable to the members in the old form than any other than can be devised."

Motion No. 8 (*Members to Board of Trustees Proposed by National Association of Pharmacologists* (*National Association of Drug Clerks*).

Moved by F. J. Wulling, seconded by W. B. Day, that the recommendation of the House of Delegates that no appointment of members to a board proposed by the National Association of Pharmacologists (see Council Letter No. 2, p. 7) be made at this time, be approved.

The Finance Committee submits the following:

PROPOSED BUDGET OF APPROPRIATIONS FOR 1913.

Item		
1.	Salaries	$ 5500 00
2.	Journal	5000 00
3.	Printing and Stationery	1000 00
4.	Clerical Expenses, Secretary's Office	1000 00
5.	National Formulary	1000 00
6.	Miscellaneous Expenses	300 00
7.	Stenographers	250 00
8.	Traveling Expenses	200 00
9.	Committee on Membership	250 00
10.	Committee on Unofficial Standards	300 00
11.	Proceedings	100 00
12.	Badges and Bars	50 00
13.	Certificates	50 00
14.	Premium on Treasurer's Bond	37 50
15.	Freight, Expressage and Drayage	150 00
16.	Journals for Reporters	35 00
17.	Section on Scientific Papers	25 00
18.	Section on Education and Legislation	25 00
19.	Section on Commercial Interests	25 00
20.	Section on Practical Pharmacy	25 00
21.	Section on Historical Pharmacy	50 00
		$15372 50

Do you approve of budget of appropriations for 1913 as above proposed? This will be regarded as *Motion No.* 9 (*Approval of Budget of Appropriations for* 1913).

Motion No. 10 (*Election of Members*). You are requested to vote on the following aplications for membership:

No. 30. Oscar Brown, 500 Cottonwood St., Pendleton, Ore., rec. by J. H. Beal and J. W. England.

No. 31. Élias Georges Aggan, 93 Luckie St., Atlanta, Georgia, rec. by J. H. Beal and J. W. England.

No. 32. Ralph W. Showalter, 3338 N. Illinois St., Indianapolis, Ind., rec. by Frank R. Eldred and Francis E. Bibbins.

No. 33. Otto Martin Harter, 2 West Main St., Norwalk, Ohio, rec. by J. H. Beal and J. W. England.

No. 34. Louis A. Elisburg, 520 Washington Blvd., Chicago, Ill., rec. by W. B. Day and A. H. Clark.

No. 35. Henry W. Merritt, 1 S. Main St., Plains, Pa., rec. by J. H. Beal and John C. Wallace.

No. 36. Augustus D. Daily, 4960 Laclede Ave., St. Louis, Mo., rec. by Francis Hemm and J. W. Mackelden.

No. 37. George H. Sommers, 4900 Laclede Ave., St. Louis, Mo., rec. by J. W. Mackelden and A. D. Daily.

No. 38. Ernest Monnier, 157 Federal St., Boston, Mass., rec. by John G. Godding and Harry W. Blake.

No. 39. Max Riesenberg, Camp Connell, Samar, P. I., rec. by Romanus Andrew LaGrindeur and J. W. England.

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COUNCIL LETTER No. 7.

PHILADELPHIA, December 28, 1912.

To the Members of the Council:

Motions No. 8 (*Members to Board of Trustees proposed by National Association of Pharmacologists* (*National Association of Drug Clerks*), *No.* 9 (*Approval of Budget of Appropriations for* 1913), *and No.* 10 (*Election of Members*: *applications Nos.* 30 *to* 39, *inclusive*), have each received a majority of affirmative votes.

In the Budget presented in Council Letter No. 6 no appropriation was made for the recently-created Section on Pharmacopœias and Formularies, and on motion of A. H. Clark, seconded by J. W. England, an appropriation of $25 (Item 22) is made to this section for 1913. It will be known as *Motion No.* 11 (*Appropriation to Committee on Pharmacopoeias and Formularies*). The appropriation is approved by the Committee on Finance.

The following communication has been received:

"To the Members of the Council:

In re subject of the Report on the Progress of Pharmacy:

I have read with interest the remarks of various members regarding the question of the Report on the Progress of Pharmacy. I am not in accord with the sentiments expressed therein.

I herewith present my views on the subject and before doing so I want to state that my sole object in desiring the Report to be published monthly in the form of abstracts is grounded in the belief that this is the only way that it will benefit a majority of our members, thereby increasing the prestige and popularity of the A. Ph. A.

It is not through any enmity or ill-will for any one connected with this work, much less Professor Diehl. I well remember the time I first saw him. I was a country lad attending the Chicago College of Pharmacy for the first time, some twenty years ago. Professor Diehl delivered our opening address. Since then he has occupied a prominent place among those I have idolized for their personality and attainments in the realm of Pharmacy. Therefore, what I write must not be looked upon as an indication that I love Caesar less, but Rome more.

It seems to me a useless waste of money to print these articles partly, or wholly, in the JOURNAL from month to month, and then do the thing all over again at the end of the year in a separate volume. There is just as much reason for printing in a new volume all the papers, editorials, etc., that appear from month to month. And there is surely no reason for this.

Every up-to-date worker in any field wants to know what is going on around him at the present time, or as near the present time as is possible. Such workers *will get this information some way*, and therefore if *we* give it to them a year old it is useless because they already have it.

The advantage of a bound volume will be had when the JOURNAL is bound and indexed at the end of the year. The argument that the numbers of the JOURNAL will remain unbound, or be lost, has no force. Any one that does not place a value on them which will warrant the expense of binding will not be benefited by *any* information that they contain. If one positively cannot afford to bind them, the information will be as available in the unbound volumes as in the bound ones, provided a good index is supplied, and each volume kept together. Aside from all this, the Council at the Richmond meeting (1910) decided to supply every member with a bound volume if he so desires. To secure this volume all that is necessary is to notify the General Secretary or Editor, at the beginning of the year, that it is desired, and pay a small fee for the binding only; an entire new set of the twelve numbers being supplied free of cost. (I think this action very unwise, but do not recall having seen the action rescinded.)

As to the amount of work involved, I believe that with the money spent for salaries, printing, binding, etc., for a year book, the General Secretary could be provided with efficient clerical help, abstractors secured to look over the various publications and, in the end, money would be saved to the Association.

I really see no necessity for publishing a complete roster of members every year. Such a list can hardly be prepared that is accurate. Incidentally, considerable valuable space is wasted every month in the JOURNAL by publishing the long list of officers and committees.

The only argument that I can see against the publication of monthly abstracts, and one that will apply with equal force to an argument to abolish *both* the Year Book and monthly abstracts is this: we have delayed so long in this matter that we have allowed another society, the American Chemical Society, to step in and under the able leadership of one of our own members, suply the long-felt want for complete and up-to-date pharmaceutical abstracts. The manner in which these abstracts are appearing, *every two weeks,* not monthly even, is the most convincing argument I know of that *it is not* too *much* work to prepare them on time. We all know that Mr. Wilbert has many other things to do, but somehow he does this in addition to all the others. A. H. CLARK.

CHICAGO, ILL., December 21, 1912."

The resolution referred to above as adopted by the Richmond (1910) meeting of the Association was as follows: "Members who notify the General Secretary *at the beginning of each year* may receive a *bound* volume of both the JOURNAL and the Report *at the end of the year* upon the payment of a price to be fixed by the Committee on Publication." (Bulletin, A. Ph. A., 1910, 356.)

At the Boston (1911) meeting, the whole subject of JOURNAL was reconsidered, and a resolution was adopted, that the size of the Report on the Progress of Pharmacy should be the same as the JOURNAL, so that the two publications could be bound together, if desired, and as directed for members by the Association at the Richmond (1910) meeting. (Bulletin, A. Ph. A., 1911, 579.)

In Council Letter No. 20 (Motion No. 4), 1911-12, Edward Kremers moved, seconded by A. H. Clark, that "the Council reconsider at the Denver (1912) meeting the question of publishing the Report on the Progress of Pharmacy as a separate volume, and to add the money thus saved to the JOURNAL, which could just as well publish the abstracts and do this at a much earlier date. The Reporter on the Progress of Pharmacy could be added to the editorial staff of the JOURNAL." The motion carried.

At the Denver (1912) meeting it was decided to publish the Report on the Progress of Pharmacy covering the period from June 30, 1910, to December 31, 1911, with the official data, etc., as a separate volume or Proceedings (Volume 59, 1911), and also, *that future Reports on the Progress of Pharmacy be published monthly in the Journal, beginning January,* 1913." (Journ., A. Ph. A. 1912, 1070, 1103.)

On November 19, 1912, in Council Letter No. 3, Prof. Diehl's letter on the subject of the Report on the Progress of Pharmacy was presented, and it has been discussed by members of the Council in Council Letters No. 4 (December 2, 1912), No. 6 (December 13, 1912), and the present letter, *but no motion has been offered to reconsider the action of the Denver* (1912) *meeting in abolishing the annual volume and providing that all future Reports on the Progress of Pharmacy shall be published monthly in the Journal, beginning January,* 1913.

Hence, the resolutions of the Denver (1912) meeting of the Council, approved by the Association, as above outlined, are in full force.

General Secretary Beal advises that Volume 59, 1911, of the Proceedings (covering the Report on the Progress of Pharmacy between June 30, 1910, and December 31, 1911), as directed by the Denver (1912) meeting, is now going through the press, and will be issued early in 1913. J. W. ENGLAND,

Secretary of the Council.

415 N. 33d St.

THALLIUM ACETATE AS A DEPILATORY.

R. Sabouraud (noted in *The Prescriber,* May, 1912) says that thallium acetate has been tried in medicine, but had to be abandoned because of its tendency to produce alopecia. The author takes advantage of this very property by using the salt as a depilatory. He prepares a salve containing about 8 grains of thallium acetate in 1 ounce of cold-cream containing some zinc oxide. A very small quantity applied to the lip each evening will cause rapid disappearance of downy growth.—*Clinical Medicine.*

SOME MEDICINE OF 300 YEARS AGO.

"We know diseases of stoppings and suffocations are the most dangerous in the body, and it is not much otherwise in the mind; you may take sarza to open the liver, steel to open the spleen, flour of sulphur for the lungs, castoreum for the brain, but no receipt openeth the heart but a true friend, to whom you may impart griefs, joys, fears, hopes, suspicions, counsels, and whatever lieth upon the heart to oppress it, in a kind of civil shrift or confession."—*Essays of Francis Bacon.*

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

O. J. BOMBA,
From Yorktown, Texas,
To Westhoff, Texas.

GEORGE A. CROSSMAN,
From Raynham, Mass.,
To Taunton, Mass.

ANDREW CAMPBELL,
From Johnstown, Pa.,
To Greensburg, Pa.

LOUIS REICHERT,
From 307 4th Ave., Pittsburg, Pa.,
To 418 Library St., Braddock, Pa.

R. A. LAGRINDEUR,
From Camp Connell, Samar, P. I.,
To Camp Eldridge, Los Banos, Laguna, P. I.

SGT. GABRIEL CUSHMAN, H. C., U. S. A.,
From Columbus Barracks, Columbus, O.,
To Ft. Barry, Calif.

Q. J. BARKER,
From Ft. Wm. McKinley, P. I.,
To Care Walter Reed, General Hospital, Takoma Park, D. C.

ROY M. SOULT,
From E. Liberty St., Pittsburg, Pa.,
To Prospect, Pa.

EDGAR B. KEEMER,
From 2213 4th St., N. W., Washington, D. C.,
To 633 Fairmont St., N. W., Washington, D. C.

CARL E. SMITH,
From 627 Spruce St., Philadelphia, Pa.,
To General Delivery, San Francisco, Cal.

JOHN S. FLEMING,
From Quincy, Kansas,
To LeRoy, Kansas.

JAMES P. CROWLEY,
From 1001 32d St., Chicago, Ill.,
To 800 W. 31st St., Chicago, Ill.

W. J. WICARIUS,
From 3118 Lowe Ave., Chicago, Ill.,
To 4900 W. 29th St., Chicago, Ill.

H. H. SAWYER,
From 672 Madison St., Brooklyn, N. Y.,
To 173 Delavan St., Newark, N. J.

U. S. PUBLIC HEALTH SERVICE.

(Recent changes in pharmacists, assignments, etc.):

Miller, Charles, pharmacist. Leave of absence for 30 days from October 1, 1912, amended to read "27 days' leave of absence from October 3, 1912." November 1, 1912.

Smith, L. G., pharmacist. Directed to report to Commanding Officer, Marine Hospital, Wilmington, N. C., for temporary duty. December 6, 1912. Granted six days' leave of absence from November 25, 1912, under paragraph 210, Service Regulations. November 25, 1912.

Osborn, John L., pharmacist. Leave of absence, without pay, for 90 days from August 13, 1912, amended to read "93 days' leave of absence, without pay, from August 13, 1912." December 6, 1912.

LEARNING FROM MISTAKES.

"If a man make a certain mistake once, the only way he can properly express his recognition of it is not to make a similar mistake later. Josh Billings once said: 'A man who is bitten twice by the same dog is better adapted to that business than any other.'"—*William George Jordan.*